PACIFIC DISCOVERY

FIFTY CENTS

Backstep Botany in San Francisco

CALIFORNIA ACADEMY OF SCIENCES

JANUARY-FEBRUARY 1959

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PACIFIC DISCOVERY

Editor and Art Director: DON GREAME KELLEY; *Managing Editor:* ROBERT C. MILLER; *Associate Editor:* IRA L. WIGGINS *(Stanford University),* A. STARKER LEOPOLD *(University of California),* JOEL W. HEDGPETH *(College of the Pacific),* VERONICA J. SEXTON, BENJAMIN DRAPER, ROBERT T. ORR, ALLYN G. SMITH *(California Academy of Sciences); Special Correspondent:* THANE RINEY *(Southern Rhodesia); Advertising and Circulation Manager:* GARY B. BARRETT

PRE-DISCOVERY

CONGRATULATIONS, SIERRA CLUB, on the beautiful new format of your *Bulletin.* The jump to 8½x11-inch size and full-color plates, all at once, must give a warm glow to the staff of this 16-page magazine — editors Vivian and John Schagen, consultant Fred Gunsky, and Doris Brown, Charlotte Mauk, Dorothy Otto, Peggy Wayburn, Dan Thrapp. The January, 1959 issue has just preceded our own belated January-February number through the meticulous printing mill of James J. Gillick and Company under the fatherly eye of the firm's senior member, Berkeley's veteran printer Otto Jeschien, long-time member and friend of both the Sierra Club and the California Academy of Sciences. ¶ During the dozen years the Club and the Academy have being going to the same printer together, we have also been jointly attending the same conferences. This year the Sixth Biennial Wilderness Conference will be held March 20–21 at San Francisco's Fairmont Hotel, with Dr. Robert C. Miller, Director of the Academy, as Conference chairman, and Sierra Club President Harold C. Bradley presiding. The Conference theme, "The Meaning of Wilderness to Science," will be illustrated, outside the convention hall, in a special diorama of representative Sierra wilderness being mounted soon at the Academy. *PD,* naturally, will editorialize on the theme. Other assisting organizations are The Wilderness Society, the Conservation Foundation, Resources for the Future, and the Federation of Western Outdoor Clubs. "The 1959 conference," the *Sierra Club Bulletin* notes, "while still concentrating on North America, will move from a national to an international level." ¶ The fastest move of all, we predict, will be made by those conferees who are also signed up for the four-day Audubon Biennial Convention opening March 21 at Asilomar, California. Among them will be *PD's* editor, slated on a panel discussing "Past, Present, and Future of Western Nature Publishing." Heigh-ho, heigh-ho! It's off to convene we go!

PD'S AUTHORS

IF NEVADA does not get a national park one of these days, it will be no fault of that veteran exponent of wilderness values, **Weldon F. Heald** of Tucson. This note accompanies his map sketch for the Moriah story: "Outline taken from U.S.F.S. map; changes and additions by W.F.H. Trails not included; there is no regularly maintained system and no map exists showing the numerous tracks and trails that can be used today; however, the F.S. latest small-scale map shows more or less well the main trails. There are also several tracks passable for jeeps, not on any map; so I thought best to leave out trails entirely." . . . ¶ In preparing his brief history of the Academy Library, **Dr. Robert C. Miller,** Director of the Academy, had the helpful coöperation of the Librarian, Miss Veronica J. Sexton. We regret that she does not appear in the pictures, having been ill when our staff photographer Charles E. Crompton shot the set. The one showing the *Encyclopédie,* we failed to note in the caption, was taken by Elmer Moss. . . . ¶ **Charles Townsend,** San Francisco business executive, and **John Thomas Howell,** Academy curator of botany, have teamed up before as photographer and author: in *Marin Flora* (University of California Press, 1949); and in the Spring 1958 issue of the *Wasmann Journal of Biology* (University of San Francisco) which features "A Flora of San Francisco, California," written by Mr. Howell, Peter H. Raven, and Peter Rubtzoff. Our present botanical salute to San Francisco, celebrating the near completion of the Academy's new Alice Eastwood Hall of Botany, was, in fact, suggested by this special *Journal* issue. . . . ¶ **Charles F. Hagar** is associate curator of astronomy at the Academy and Morrison Planetarium lecturer. D.G.K.

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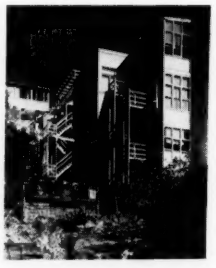

THE COVER

HANGING GARDENS and doorsteps of Telegraph Hill—a spontaneous weedy flora hangs on, too—typifying our "Doorstep Botany in San Francisco" feature (*see pages 14–26*). The photograph is by Charles Townsend.

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A JOURNAL OF NATURE AND MAN IN THE PACIFIC WORLD

EDITORIAL

MR. HEYERDAHL'S AKU-AKU

IF THERE WAS ANYONE navigating those turbid waters of human history in the Pacific Ocean who stood in need of an *aku-aku,* it was Mr. Thor Heyerdahl. Ever since the *Kon-Tiki* business of 1947, practically all others working these same waters have had their torpedo tubes trained on him; they've hit him below the water line in several places, but they haven't sunk him. Now they may be too late—he claims to have an *aku-aku* in his wheelhouse, one he picked up on Easter Island.

Nearly everybody (if bookstore and lending library figures tote up truthfully) has read *Aku-Aku.* For the few others who are still waiting to borrow it from a friend who belongs to The Book-of-the-Month Club: an *aku-aku,* Heyerdahl learned from his Easter Island friends, was one of the "many spirits which were friendly and helped certain people; most of these were friendly to one particular family [or person] only, and hostile to everyone else." So if the intrepid Norwegian has really picked up an *aku-aku* worth its salt, the little Polynesian-type guardian angel should be going all out to push his off-brand Pacific migration theories against the stiff buyer resistance whipped up by the heavy standard brands stockholders. If so, it could mean a substantial rise in Kon-Tiki Preferred.

For the armchair explorer, for everyone who enjoys a solidly good adventure yarn which is the narrative of a serious scientific expedition, *Aku-Aku*—like *Kon-Tiki*—is one of those you can't put down. Just as the raft classic gripped you in the suspense of dangerous voyaging, so the Easter Island story spells you with the mystery of place—and the mysterious giant stone heads are only what appears on the surface! (One reader we know, a confirmed claustrophobe, did put *Aku-Aku* down before the last chapter – she couldn't stand another secret cave.)

But a rather large proportion of *Pacific Discovery* readers, we state with some confidence, have, or will have read Heyerdahl's new best-seller out of interest in the larger mystery of mankind in the Pacific, the mystery of whens and hows and whences those inscrutable stone faces of Rapa Nui have come to symbolize. And they will have read other books—the intriguing scent of controversy rides the Pacific winds!

In any field of endeavor, such as scientific investigation, the daring young challenger with a gift for popularizing his exploits is bound to capture our imagination. When Thor Heyerdahl in 1947 launched the *Kon-Tiki* into the long-standing controversy over Polynesian origins and made himself and his fellow raftsmen the world's heroes, the venture had the double appeal of a brave deed and something done which experts had pronounced impossible. Unfortunately, such a showy action can hide the true face of that which motivated it. The serious but lay viewer of the show must judge whether his hero is merely an adventurer, a limelight-seeker, or a dedicated protagonist willing to risk everything for his worthy cause. Whether his cause proves right or wrong, Heyerdahl is firmly established, in our view, as one of the latter.

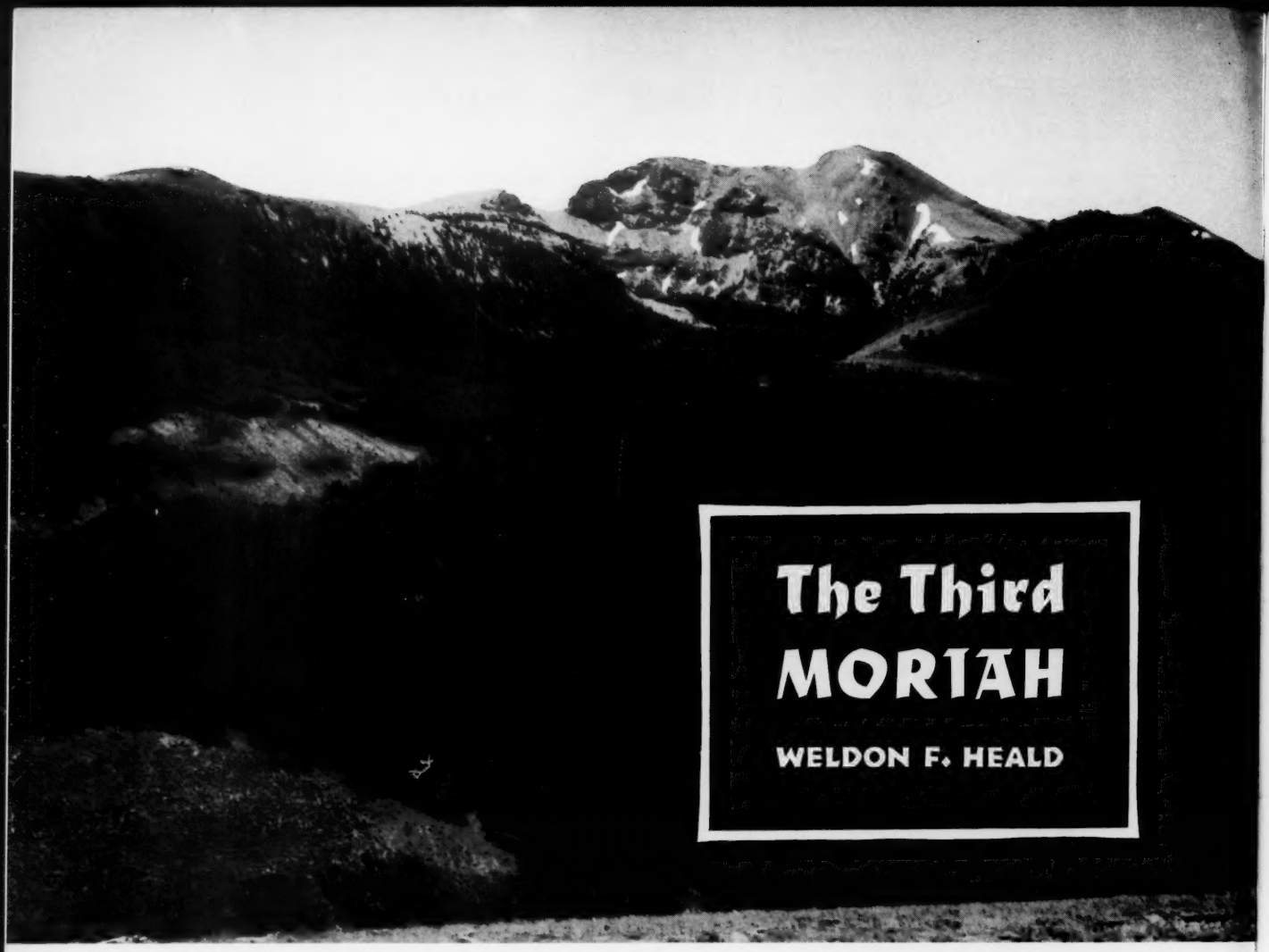
Soon after the American edition was published in 1953, we noted too briefly in these pages Heyerdahl's book, *American Indians in the Pacific: The Theory behind the Kon-Tiki Expedition.* This is the vast and erudite work in which the Norwegian anthropologist threw down his challenge on the field of scholarly investigation into the origins of the Polynesian peoples. Since then we have dug more deeply into this 800-page book, compelled by the reading of two others—*Aku-Aku,* and Dr. Alfred Métraux's *Easter Island: A Stone-Age Civilization of the Pacific.* We make no pretense of competence to judge the validity of Mr. Heyerdahl's arguments and conclusions; but we do not hesitate to say that no mere adventurer in science could have written the book in which they are set forth, and that they cannot be ignored in any future investigations in this field.

One good book leads to another, we like to keep harping here. Actually, we read Métraux first—it came out a year or so before Heyerdahl's Easter Island story —then *Aku-Aku,* and wound up rereading most of *Easter Island* because Métraux and Heyerdahl have made much reference to each other in the spirit of professional give-and-take. We make our usual plea that you read both books. We feel certain, indeed that one of the most interested readers of *Aku-Aku,* and the technical work to follow, will have been Dr. Métraux himself. His account is based on his expedition of 1934; one can only admire the fairmindedness with which he yields place to the later comer: "At the present time [1955]," he says in his closing chapter on origins of Easter Island civilization, "Heyerdahl is on the soil of Easter Island seeking to wrest from this much-explored piece of land its ultimate secret. Fortune, which has so often befriended him, may perhaps have reserved for him discoveries that will enable him to close the debate. If I enter this discussion here it is with the aim of putting before the reader a brief outline of Heyerdahl's hypotheses and acquainting him with some of the objections they have raised; but the question cannot be finally settled until we know the results of his expedition." Not all of Heyerdahl's critics, we dare say, have spoken up in such gentlemanly tones: "It is not without some hesitation that I question the links he establishes between Easter Island and Peru. In the first place, it is hardly fair to dissociate his ideas on Easter Island from the sum total of his work and conclusions. . . . There are times when I find it impossible to accept Heyerdahl's method or to support his conclusions, in spite of the admiration I feel for his vast erudition and the cogency with which he presents his arguments." (This last quotation from Métraux, in Michael Bullock's translation, precedes our first [*Easter Island,* p. 221].)

What every fairminded investigator knows, of course, is that in this as in any of history's great unsolved enigmas, the last word is reserved for no one, as each takes his turn at the digging, and the reporting on what he sees by his particular light.

If one thing is generally admitted about Polynesia it is that the peoples who landed and settled on these

(Continued on page 32)



The Third MORIAH

WELDON F. HEALD

PHOTOS BY THE AUTHOR

THERE HAVE BEEN three Moriahs. The first was the Biblical Land of Moriah, where the Lord chose a mountain upon which he directed Abraham to sacrifice his only son, Isaac. The second was Mount Moriah in Jerusalem, the site of Solomon's Temple. The third is another Mount Moriah in eastern Nevada, named by the Mormons a century ago.

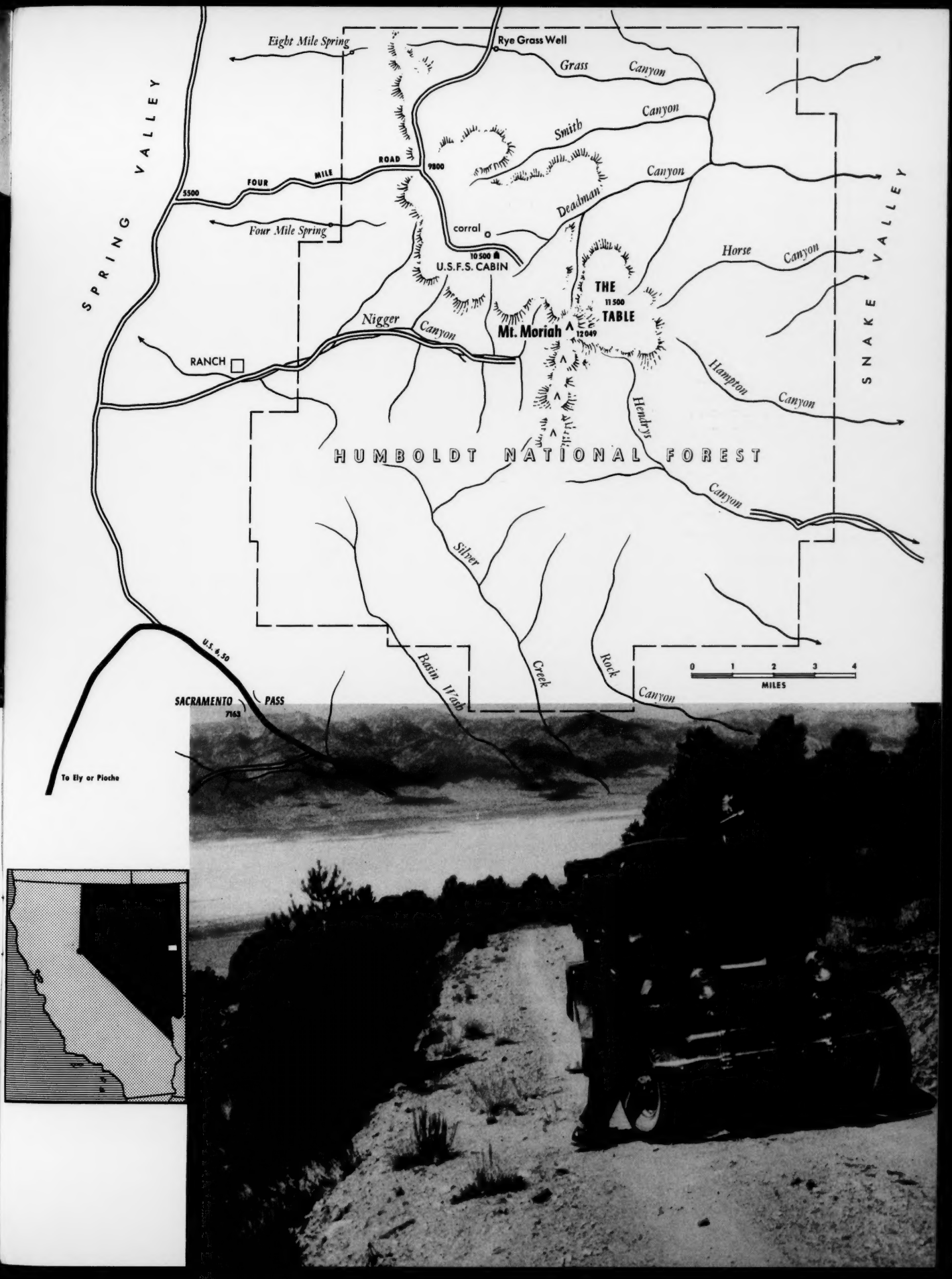
The last Moriah is a big mountain, 12,049 feet high. It culminates the northern end of the gigantic Snake Range, just north of Sacramento Pass, where U. S. Highway 6-50 crosses from Ely to Delta, Utah. Towering nearly 7,000 feet over the wide, treeless, desert valleys to the east and west, Moriah rises above timberline to a barren, arctic ridge, three miles long. Four peaks line the crest, the most northerly being the highest, and they dominate a rugged, 200-square-mile area of deep, rock-walled canyons, widespread stands of pine, fir, spruce and aspen, and lofty, windswept uplands. Although within a detached section of Humboldt National Forest, the Moriah country is practically unknown except to a few local sheepmen, prospectors, and hunters. The district ranger's inspection trips are limited to a small part of it once or twice a summer. In fact, Nevada's Moriah is as mysterious and almost as remote as Abraham's, and much more so than Solomon's.

Furthermore, it is the most downright elusive mountain I ever tried to get to.

I first made its acquaintance in 1955, when Albert Marshall and I were scouting the Snake

▲ Nevada's Mt. Moriah dominates a 200-square mile area of rugged rock-walled canyons, widespread stands of pine, fir, spruce, and aspen, and lofty, windswept uplands above broad desert valleys.

➔ Everything that could go wrong with a car went wrong; Albert Marshall and I were stuck on the side of the mountain in as remote a spot as you could find. The map is drawn from copy prepared by the author, based on a U.S.F.S. map.


Eight Mile Spring
Rye Grass Well
Grass Canyon
Smith Canyon
Deadman Canyon
SPRING VALLEY
FOUR MILE ROAD
5500
9800
Four Mile Spring
corral
10500
U.S.F.S. CABIN
THE TABLE
11500
Mt. Moriah
12049
Horse Canyon
SNAKE VALLEY
Nigger Canyon
RANCH
Hampton Canyon
Hendrys Canyon
HUMBOLDT NATIONAL FOREST
Silver Creek
Rock Canyon
Basin Wash
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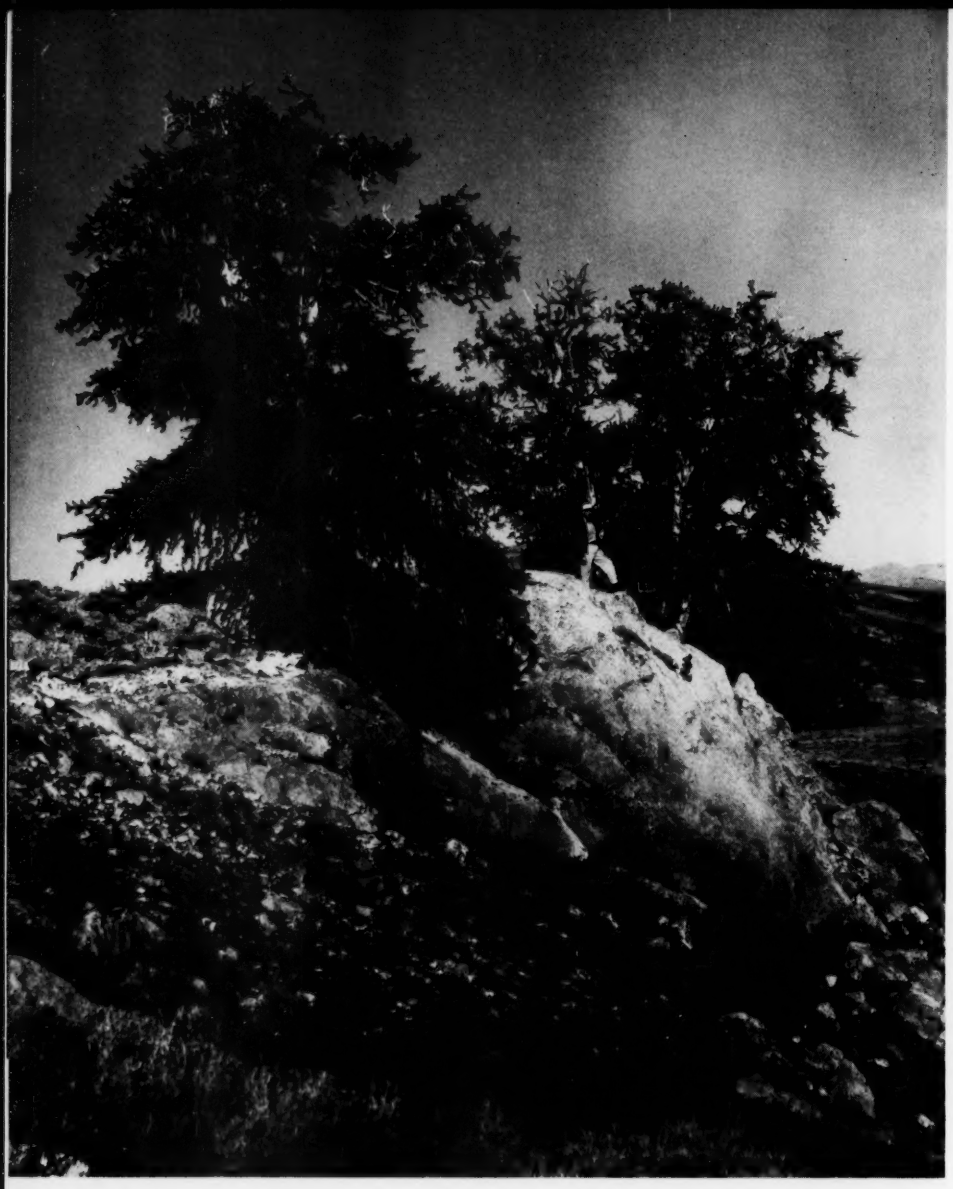


A fine stand of bristlecone pine clings to the exposed upper slopes of Mt. Moriah.

Range around Wheeler Peak for the proposed Great Basin Range National Park. Again and again we would top some high point and look northward over Sacramento Pass to the great jumbled mass of Moriah. It always seemed to have a distant, aloof quality that fascinated us, and we made a resolve to explore it. There was no time that summer, nor the next. But we heard things about Moriah which made it even more alluring –there was a fabulous lost mine that had been worked secretly by a Paiute Indian; Hendrys Canyon, on the east side, was reported to be one of the most scenically spectacular in Nevada; a magnificent stand of giant bristlecone pines grows on the upper slopes; and the so-called Table is a unique flat plateau, several square miles in area, above timberline just below the highest peak.

So in 1957, Albert and I made an effort to get to this fascinating mountain. That year Darwin Lambert, editor of the Ely *Daily Times*, and photographer Erwin Fehr, were using a four-wheel-drive truck in making the movie, *Great Basin Range–Nevada*. The former kindly lent it to us for our trips and this was the opportunity we had been looking for. Thus, early one August morning, Albert and I turned off the highway and headed north up Spring Valley, along the western flanks of Moriah.

We had learned that the quickest way to the high country is a steep, rough, and narrow truck trail that climbs 5,000 feet up the west slope. Called the Four Mile Road, this hair-raising route was built some years ago to serve a lead mine, which is now abandoned, and it somewhat resembles a winding ant track on a barn roof. Ralph Kaufman of Baker, who helped build the road, says that when he drove loaded ore trucks down the mountain, he'd leave the door open, with one foot out, ready to jump if anything went wrong. It's that kind of road.

From the start our borrowed car shook, rattled, and groaned over the stony track and seemed logy when we hit the first heavy grades. I dropped progressively into lower gears, but it didn't do much good. The truck just wasn't responding and we both began to realize that maybe we weren't going to get to Moriah after all. And we didn't. Three-quarters of the way up, at an altitude of about 9,000 feet, the car developed a wheezy whine, accompanied by ominous clanking. Then suddenly nearly everything that can go wrong went wrong—the radiator boiled over, the oil-pressure gauge sank to zero, and the battery went dead. We were stuck high on the mountainside in about as remote a place as you can find.

The only thing to do was to get turned around somehow and coast down to the valley. We'd still be miles from anywhere, but better off than where we were. So, directed by Albert, I let the car back by gravity a quarter mile to the nearest wide spot. Swinging sharply into this, we at last faced downhill. But I'd gone a bit too far. The right rear wheel was over the bank a foot or so and no amount of pushing would budge the car. We were stuck worse than ever.

There followed laborious work with the jack, raising the rear wheel—lift a few inches, fill with rocks, then lift again and pile in more rocks. On the third repeat, Albert lifted his head.

"Listen. What's that?" he said.

I heard the distant hum of a motor, too.

"Airplane," I said, and went back to work.

But I was wrong. Within five minutes we saw a green Forest Service three-quarter-ton truck round the corner above and come down the mountain towards us. It was District Ranger Archie Murchie and his assistant returning from an overnight inspection trip. They stopped, put a chain on our front axle, pulled us out, then followed us down to the valley. There we abandoned the car and Archie kindly drove us the thirty-five miles to Lehman Caves. Next day Tom Simms towed the stricken truck to Baker and doctored it in his garage. Last I heard it was still bucking Nevada's back roads.

Maybe this rescue was a coincidence. Albert and I look upon it as a sort of miracle, however, and to us Archie Murchie wouldn't be out of character with a halo. The odds against a car coming down the Four Mile Road at any one time are astronomical. That one did is unlikely, improbable, and wholly incredible—but it happened. Then again, possibly mountains don't leer. But that's what Moriah seemed to be doing a couple of mornings later as I headed for home.

In July 1958 Albert and I again attended the annual meeting of the Great Basin Range National Park Association at Lehman Caves. Then we did some exploring in the Wasatch Mountains over in southern Utah. But both of us still had Moriah on our minds and, upon our return to the caves, made arrangements for another try at that evasive mountain. Unfortunately at this point, Albert was suddenly called back to California and he regretfully departed. I was luckier and at 6:00 A.M., July 17, met Elwin Robison at the Spring Valley turnoff.

Elwin has a large automobile agency in Ely and is White Pine County road commissioner. He comes from a pioneer cattle family that operates several extensive ranches and runs stock over a good bit of eastern Nevada and western Utah. He's known the country since childhood and has hunted the rugged area just north of Moriah, as well as some of the eastern canyons. But like almost everybody else in the world, he had never been up on the mountain itself. So this trip was new to both of us.

Elwin's six-cylinder, four-wheel-drive truck took the Four Mile Road like a well-trained greyhound. Within an hour we went over the top and entered a surprising upland country that would never be suspected from below. Stretching northwest from under the snow-spotted peaks of Moriah are rolling highlands, 10,000 to 10,500 feet elevation, which are fully ten square miles in area. Broad ridges alternate with shallow, swale-like valleys radiating in all directions. The latter hold springs which are the birthplaces of streams that eventually plunge down into deep canyons on both sides of the range. The open slopes are covered with grass and stunted sagebrush, lush flowery meadows surround the springs, and here and there are

dark patches of pine forest, mingled with the lighter green of aspen groves. In north-facing hollows an occasional snowbank still lingered.

We breathed deeply. It was good to be alive. The early morning sun was golden bright, the air sparkling crisp, and the sweeping views out over the desert valleys to distant blue mountains were stupendous. All in all, it was as exhilarating a sky country as I had ever seen.

During the summer this is domestic sheep range and we passed through a nervous, blatting flock of a couple of hundred or so. But we found no sheep camp nor any indications that another human was on the mountain that morning. After winding through the uplands for four miles we came to the Forest Service cabin and corral on a high divide near a large spring. It was a delightful situation at the edge of an aspen grove and somehow the sheep had spared the brilliant blue-and-red display of lupines and Indian paintbrush in the nearby meadow. Here we had our "second breakfast," as the mountaineers call it, then we spent six hours exploring these delectable highlands.

Apparently the sheepmen had crisscrossed the country with jeeps. But fortunately these grass and stunted sage uplands aren't vulnerable, as the lower desert is; and unless a route becomes established, the tracks are neither noticeable nor permanent. Even so, we were particularly careful to avoid ground that would show traces of our passing, and I doubt if an Indian could have followed us afterwards. My accommodating host drove a vehicle that rivaled a mountain goat and he was eager to take me to the crest of every pinnacle that wasn't absolutely perpendicular. In this way we covered territory that morning which would have taken two or three full days on foot.

Thus, Elwin and I ascended the northwest ridge

of Moriah's highest peak to the last prostrate timberline spruces, where we looked into the deep north cirque and across to the lofty level edge of The Table. We traversed a grove of huge, gnarled limber and bristlecone pine to a rocky outlook. There, twenty miles to the south, Wheeler Peak rose into the blue sky, resplendent with dazzling snowfields. We followed a long ridge eastward to a point from which we could look down the deep cleft of Deadman Canyon to broad Snake Valley and the desert ranges of Utah. Another summit gave us a westward view over the mountain's mile-high escarpment to the gleaming white playas of Spring Valley, backed by the huge continuous wall of the Schell Creek Range. It was big country, and wherever we went we received the full, breathless impact of its immensity.

Perhaps on account of the sheep, we saw little wildlife. One yellowbelly marmot, a couple of mule deer bucks, and a bobcat was the total list. The last was a young one dead in a sheepman's trap—the signs showed that it had struggled and thrashed around for hours before giving up. Such heartless cruelty makes my blood boil every time I think of it. We who value our native wildlife should join the Defenders of Furbearers and work for the legal banishment of steel traps.

On one high knoll, nearly 11,000 feet altitude, we found a lone mother sheep and her lamb, a couple of miles from the flock. She was apparently poisoned and unable to rise and, of course, the lamb wouldn't leave her. Both were doomed unless they could get to water. So Elwin carried the mother sheep over the ridge and gently set her on her feet. Last we saw she was unsteadily making her way to the meadow below, the lamb trailing after. We both hoped she made it.

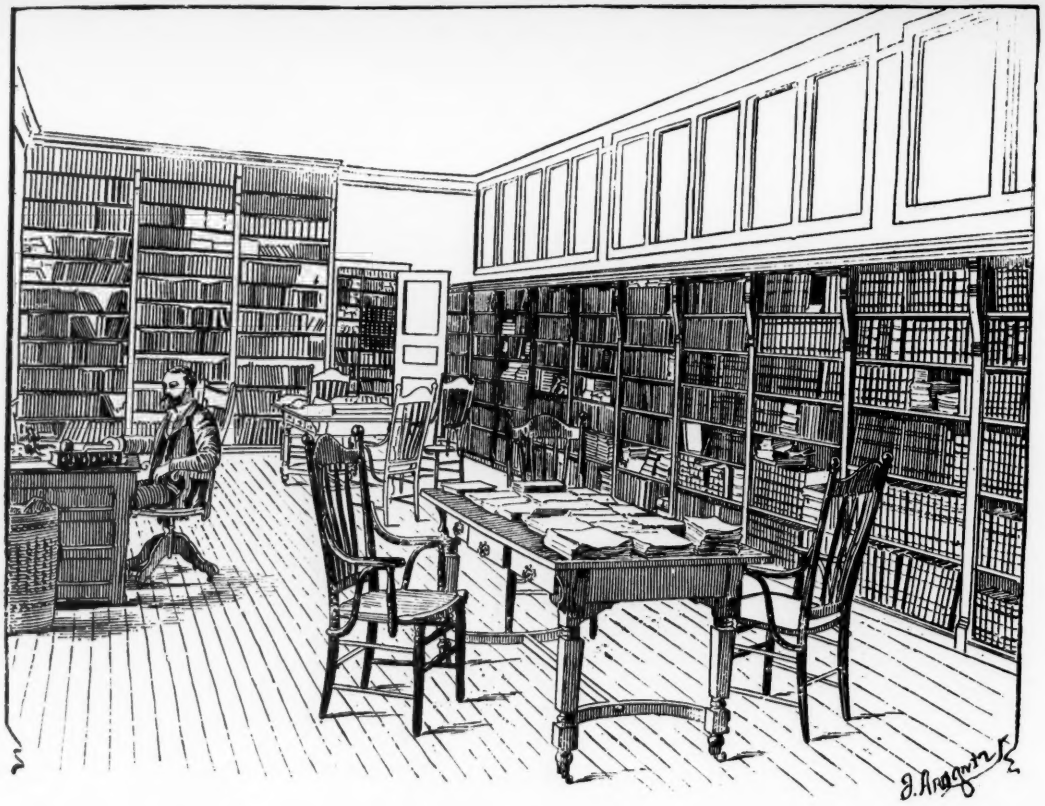
I am apt to be Spartan in my eating habits in the mountains and all I had brought for lunch was a can of kipper snacks and some cookies. Elwin had other ideas, however. When we got down to Spring Valley in mid-afternoon, he suggested that we really eat. The idea was attractive. So he drove up Nigger Creek Canyon a few miles to a shady grove of cottonwoods, willows, and birches beside the stream. There we built a fire and Elwin put a couple of Dutch ovens on the coals. From one of them later came two thick, juicy steaks and fried potatoes, and from the other warm, fresh bread. With these went ice cold drinks from a portable refrigerator and good strong cowman's coffee. It was one of the best outdoor meals I can remember and was a fitting climax to a day full of surprises.

This trip to the third Moriah was nevertheless in my mind only a preliminary scouting expedition. That great lonely mountain above the Nevada desert far exceeded expectations. To me now, it is more alluring than ever. I'm going back and climb the highest peak, inspect the sky-perched Table, and penetrate deep into Hendrys Canyon.

Maybe next summer. Maybe the year after. Maybe . . .

← Wheeler Peak soars into the blue, 20 miles south of Moriah, over the deep gap of Sacramento Pass.

→ Coming down from Moriah, we found a shady grove beside Nigger Creek; Elwin put two Dutch ovens on the coals from which he produced juicy steaks and warm bread.



Reading room of the Academy Library, 1893. (Drawing by J. Arroniz in *The California Magazine*, January, 1893)

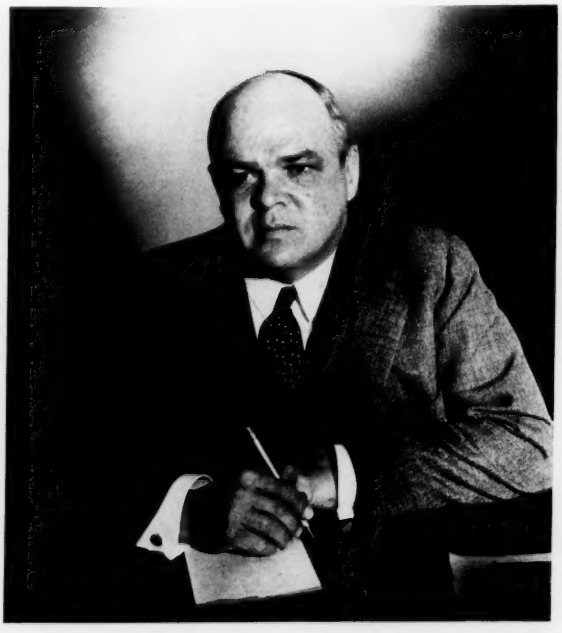
WARD MAILLIARD AND THE ACADEMY

EARLY IN THE MORNING of April 18, 1906, John Ward Mailliard, Jr., then a boy of fifteen, was awakened from slumber by the unusual circumstance that his bed suddenly leaped across the room and crashed into the wall, then leaped back and struck the opposite wall. In an adjoining room his mother was having similar problems with the furniture. As soon as she could get to her feet she made her way through the creaking, groaning house to her son's room, where she found him still in bed.

"Ward," she cried, "are you all right?"

"Yes," he replied, then added—with the same scientific detachment exhibited by Pliny the Elder at the destruction of Pompeii—"my bed has moved clear across this room twice. I'm waiting to see if it's going to do it again."

Elsewhere in San Francisco people reacted to the earthquake in various ways. Many rushed



John Ward Mailliard, Jr. (Moulin Studios)

➔ Reading room of the Academy Library, 1959. (Milton T. Pflueger, A.I.A., San Francisco)

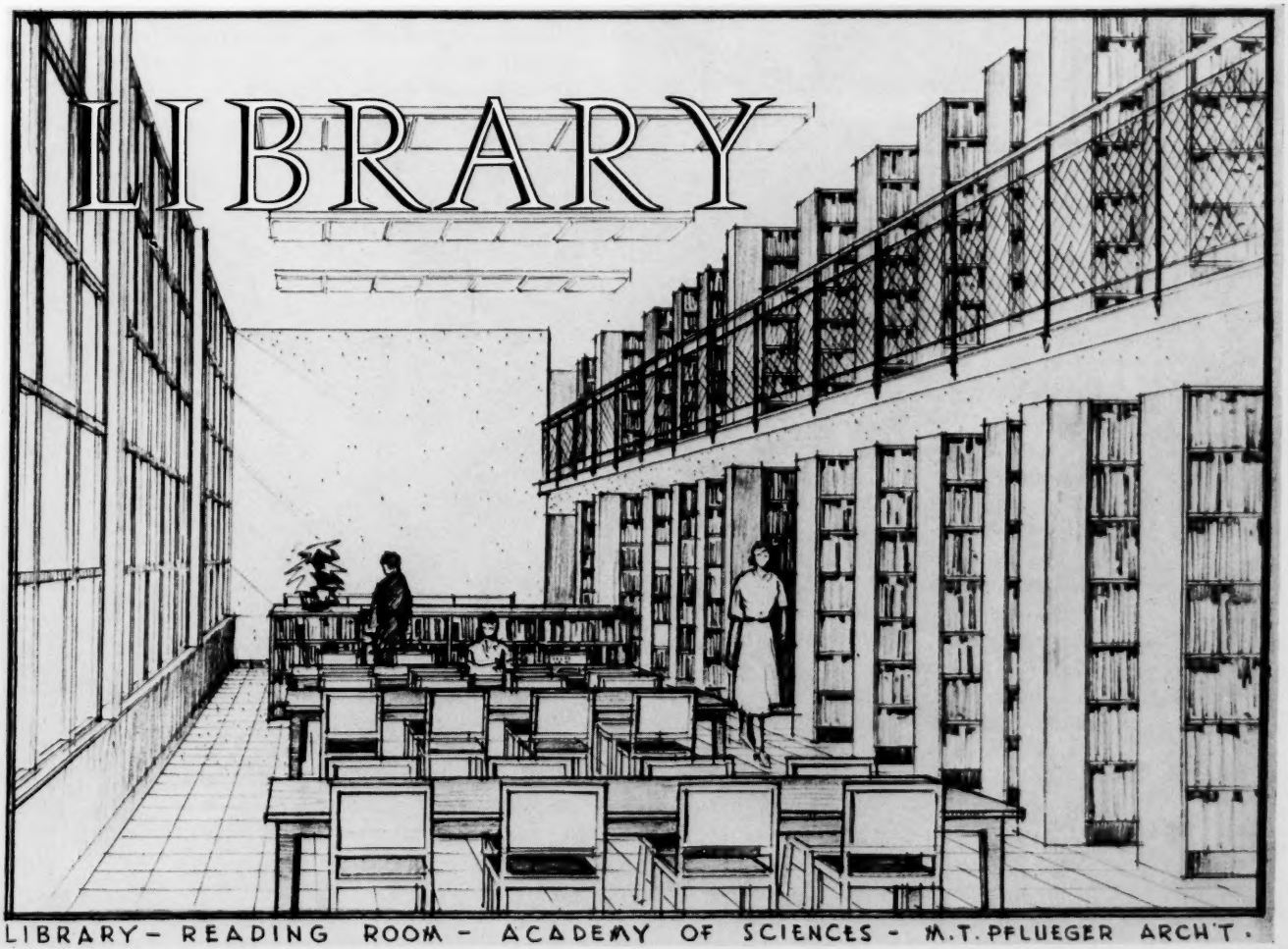
terror-stricken into the streets, to be injured by falling bricks and other debris. George Davidson, a past president of the California Academy of Sciences, struggled to his dresser to get his watch, in the meantime methodically counting off the seconds to determine the duration of the quake. Alice Eastwood, the Academy's curator of botany, dressed as quickly as she could and hurried down to the Academy's building on Market Street to find out what had happened to the museum and its collections.

What she found was a shambles. The museum was thoroughly wrecked. Even the stairs had collapsed, but the wrought-iron railing remained, and she made her way upstairs to the botany department by climbing the railing, putting her feet on the rungs. She got out the most valuable specimens—the type collection of about one thousand plants—and lowered them to the ground floor by strings, each string carrying a sizable bundle.

In the meantime, fire—which was spreading unchecked from block to block because the water mains had been destroyed by the earthquake—was approaching the Academy. Miss Eastwood sallied forth on foot and, by great good fortune, found a man with an empty spring-wagon pulled by one horse.

"Can you haul a load for me?" she asked. "Yes," he replied, "but I shall have to charge you a high price." Her heart sank, because she had very little money. "How much?" she enquired. "Five dollars," announced this profiteer. She had five dollars, so the deal was made, and one spring-wagon load of the Academy's vast possessions was hauled away to safety.

So much has been made of this episode—and I think naturally, because without Miss Eastwood's determined action it is unlikely that much of anything would have been saved from the holocaust—that other people who participated are seldom mentioned. Actually there was a great deal of activity around the Academy that morning. Everett Loomis, the director, was there, as were John Van Denburgh, curator of herpetology, and Alfred L. Kroeber, curator of anthropology. Dr. Robert Porter, a San Francisco dentist and friend



LIBRARY - READING ROOM - ACADEMY OF SCIENCES - M.T. PFLUEGER ARCH'T.

of the Academy, stopped by to assist. Samuel Barrett, a graduate student in anthropology at the University of California under Dr. Kroeber, remembered that he had left his thesis at the Academy and hurried there to save it—to find that Dr. Kroeber, with remarkable prescience, had taken the precious document home a day or two before.

Notwithstanding the availability of all this personnel, there was not much that could be done. The fire was approaching, the city was under martial law, federal troops were clearing out the area, and there was no transportation. Nothing could be saved but what could be loaded into the one spring-wagon commandeered by Miss Eastwood. This included the botany types, the Academy's records, a small number of books, and a few type specimens of birds, reptiles, and fish.

Apparently somebody also thought of the library and started carrying out books, but this was a hopeless task, and only a handful of volumes were rescued. Before noon on that fateful April day, the greatest scientific library on the Pacific Coast—one which has not even yet been restored in its entirety—was reduced to senseless ashes.

The library that was thus destroyed had been built over a period of fifty-three years, and included among its holdings some of the most important scientific literature of the world. It contained the famous Catesby *Natural History of Carolina, Florida and the Bahama Islands,* published in London in 1731–43, and it contained what is said to have been the greatest collection to that date of pre-Linnean literature. It also contained the publications of all the important scientific institutions of the world, received in exchange for the Academy's *Proceedings,* which began in 1854.

When the California Academy of Sciences was founded in 1853, it named on its original slate of officers a librarian. The first person to hold this title was Colonel Thomas J. Nevins, San Francisco's first superintendent of schools. Colonel Nevins became a librarian without a library. There were no books in his custody except those he personally owned. But the Academy's library grew rapidly, and sometimes under unusual circumstances.

On July 24, 1856, Dr. Andrew Randall, the Academy's first president, was shot by a gambler named Joseph Hetherington. Five days later Joseph Hetherington was hanged by a Vigilance Committee. In the interim the Academy held its regular meeting, and the minutes record—with almost maddening detachment and no slightest reference to the stirring events of the time—"Mr. A. F. Beardsley deposited for the Library, Michaux and Nuttall's North American Sylva; also a pamphlet containing descriptions of new coniferous trees of California." The Academy's library was growing, even if the members were being killed off!

A number of important men served the Academy as librarians—among them Albert Kellogg, James G. Cooper, Hans Herman Behr, and J. D. Whitney, the last named being later appointed Professor of Geology in Harvard University. One of the most colorful, if not the most distinguished, was Samuel J. Brannan, a Mormon elder who had led some two hundred Mormons to California, and who later was read out of the church for such minor indiscretions as drinking, gambling, and serving as chairman of the first Vigilance Committee. Hanging miscreants without due process of law was frowned on by the Mormons, who sometimes referred to it as murder.

Brannan became a member of the Academy in 1869 and served briefly as librarian in 1871. The only known printed list of the Academy's exchanges was brought out that year. It was printed

▲ Anne Crlenkavich and Brita Boeckel examine some of the 199 volumes of the monumental *Encyclopédie Méthodique, ou par Ordre des Matières.* A rearranged and vastly augmented edition of the famous Diderot and d'Alembert *Encyclopédie,* it exists today in but few complete sets. The only one in the West, this set, presented to the Academy by its Trustees, will have a place of honor in the new Library.

in large, decorative type of several mixed styles, and doubtless represents the flamboyant touch of Sam Brannan, who (he had numerous lines of business) was a printer. The list includes eighteen institutions in the United States and forty-four abroad, also eighteen scientific journals with which publications were exchanged.

The size of the library at the time of Brannan's incumbency is not precisely known; but inventory was taken in 1875, at which time the library numbered five thousand volumes. That would not be a large scientific library today, but it was a remarkably good one for the time and place. To have acquired and preserved five thousand volumes of scientific literature in twenty-two years, with only amateur and unpaid librarians, is quite an achievement. Much credit is due these dedicated workers, who laid a solid foundation for the growth of the Academy's library in subsequent years.

On the morning of April 18, 1906, when young Ward Mailliard's bed was leaping about with such unbridled exuberance, no one could possibly have guessed that there would be any connection between the earthquake and the fact that about half a century later the Academy would be building a John Ward Mailliard, Jr., Memorial Library. But there is a connection.

The Academy's entire plant, then located at 833 Market Street, was destroyed beyond any hope of restoration. It was subsequently decided, with the blessing of a charter amendment voted by the citizens of San Francisco, to rebuild the museum on city property in Golden Gate Park. Ward's father, John W. Mailliard, was a Trustee of the Academy at the time this decision was made, and he rendered effective service during the trying years of reconstruction and of building a new museum practically from scratch.

The first wing of the new structure in Golden Gate Park was opened to the public in 1916, and shortly thereafter John Mailliard and his brother Joseph, who were serious amateur ornithologists, donated their large collection of California birds to the Academy. This was the nucleus of the Academy's department of birds and mammals, and a few years later Joseph Mailliard was asked to become curator of that department and served effectively until his retirement.

In the meantime the Academy's library was being rebuilt. Institutions all over the world contributed generously. The Academy of Natural Sciences of Philadelphia contributed its entire collection of duplicates; our receipt record consists of 93 tightly typed cards of titles. The Kaiserliche Akademie der Wissenschaften in Wien replaced its extensive

The Library's card catalog, which Associate Librarian Ignatius McGuire is using here, will soon have greatly expanded space in the new building.

sets of *Sitzungsberichte* and *Denkschriften*; the output of this institution to date constitutes our largest consecutive serial holding. Valuable gifts of publications were received from the Boston Society of Natural History, the Smithsonian Institution, the British Museum (Natural History), and the Royal Hungarian Society of Natural Sciences, to mention only a few.

There were important donations from private individuals. Wilhelm Englemann of Leipzig replaced our sets of Engler and Prantl's *Das Pflanzenreich*, also *Die natürlichen Pflanzenfamilien*, and *Die Vegetation der Erde*. Bernard Quarich, London bookdealer, donated important volumes. This eagerness throughout the world to assist a scientific institution that had met with catastrophe was a heart-warming experience. It enabled the Academy's library to rapidly resume its place as an important research library; and while lacking some of the rare and irreplaceable volumes of an earlier day, it grew through the years to a size far larger than that of the library that had been destroyed.

The museum building that was opened in Golden Gate Park in 1916 contained a library that was adequate for the Academy's needs at that time, and for a few years into the future. But before many years that library had outgrown its quarters. It grew into adjoining rooms, and down a long corridor, and then into rooms farther removed. It became unwieldy and impractical, and a new building was clearly indicated.

Ward Mailliard shared the interest of his father and his uncle in the Academy through the years. He became a member in 1911, when he was twenty years old, at which time the new building in Golden Gate Park was in the planning stage. He knew that the structure which was completed in 1916 was the first step toward a much larger mu-

↑ Dr. Leo G. Hertlein, associate curator of Geology, checks a tray of bivalves with illustrations in a volume of Reeve's *Conchologia Iconica*, one of a set of twenty.

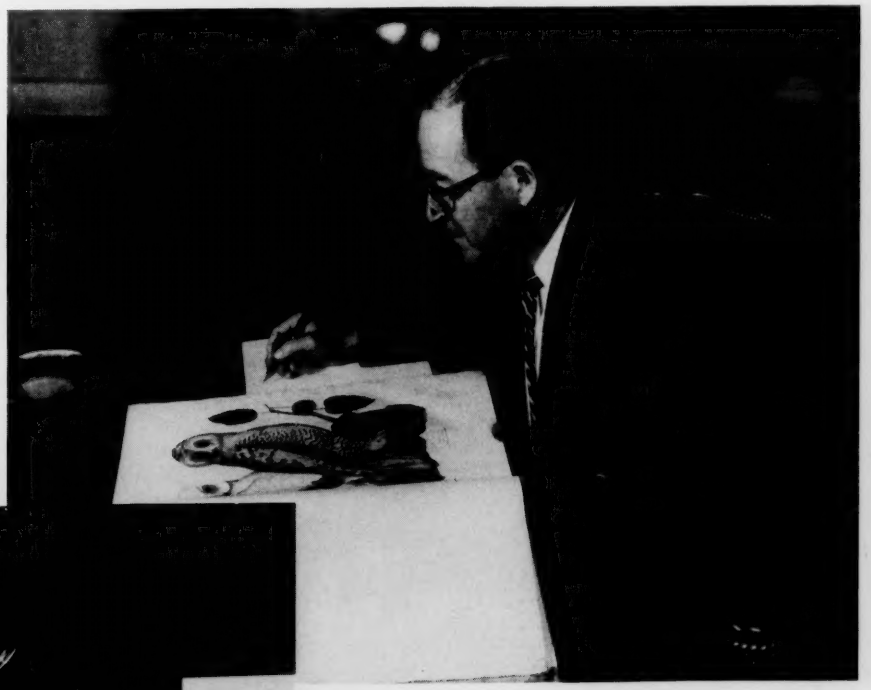
→John Thomas Howell, curator and Elizabeth McClintock, associate curator of Botany, use Bateman's *Second Century of Orchidaceous Plants*—one of the department's fine collection of botanical books—to identify and describe herbarium specimens.

seum that was planned for the future. He saw the Aquarium added in 1923, and the first unit of the Simson African Hall in 1930. When he was elected a Trustee of the Academy in 1941, and Chairman of the Board in 1946, he was in a position to push the overall plan much nearer to completion.

In 1951 he spearheaded a fund-raising campaign which eventuated in construction of the new Hall of Science and Alexander F. Morrison Planetarium at a cost of $1,100,000. He also worked indefatigably to raise funds for the proposed Alice Eastwood Hall of Botany and for a new Academy library building. A library was actually included in the Planetarium project, but funds proved insufficient, and at the last minute the library had to be eliminated from the plans.

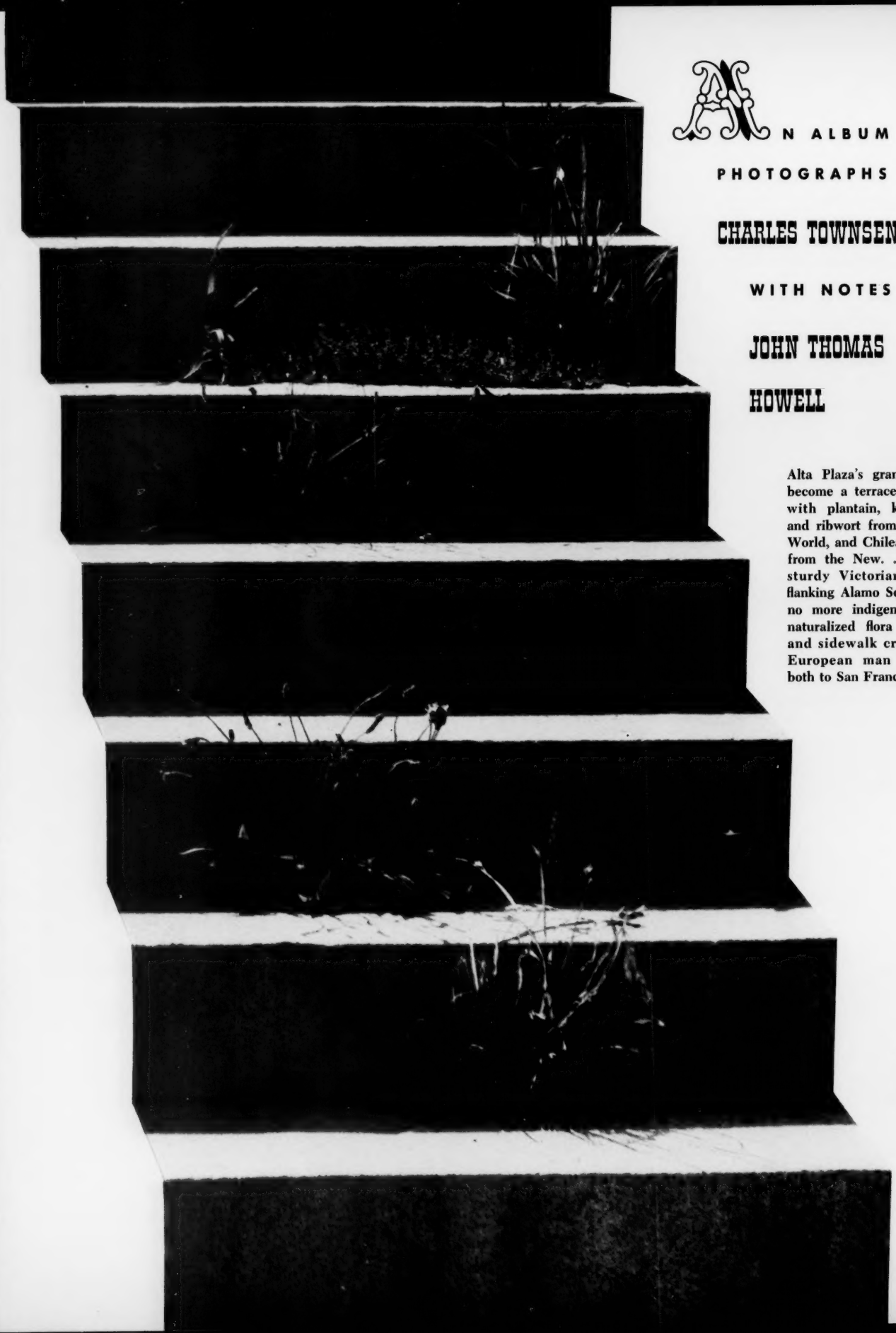
This was a great disappointment to Ward Mailliard, and the library project remained close to his heart. He frequently spoke of it, and made efforts to obtain both public and private funds for the purpose. After his untimely death of July 11, 1954, it was learned that he himself had set up a trust fund payable to the Academy for "a library building . . . . or the enlargement or improvement of an existing library building." With this fund, augmented by memorial gifts, and with the Alice Eastwood Herbarium Fund already in hand, it was possible to combine both projects in the same building program.

The fact that the John Ward Mailliard, Jr., Memorial Library and the Alice Eastwood Hall of Botany are now under construction brings to mind a statement made many years ago by one of Ward's close friends, the Academy's late curator of birds, James Moffitt: "If Ward Mailliard undertakes to do a thing, it's just as good as done."



→ **The Academy's extensive collection of books on birds and mammals includes *Illustrations of American Ornithology*, one of the few volumes saved when the 1906 earthquake and fire destroyed the Academy's Market Street museum building. Dr. Robert T. Orr, curator of birds and mammals, inspects portrait of the snowy owl.**

← **Schmidt's *Atlas der Diatomaceenkunde*, another important book used extensively by the Academy's Geology Department, is here under the scrutiny of the curator, Dr. G. Dallas Hanna. (Academy photos by Charles E. Crompton)**



AN ALBUM OF PHOTOGRAPHS BY CHARLES TOWNSEND

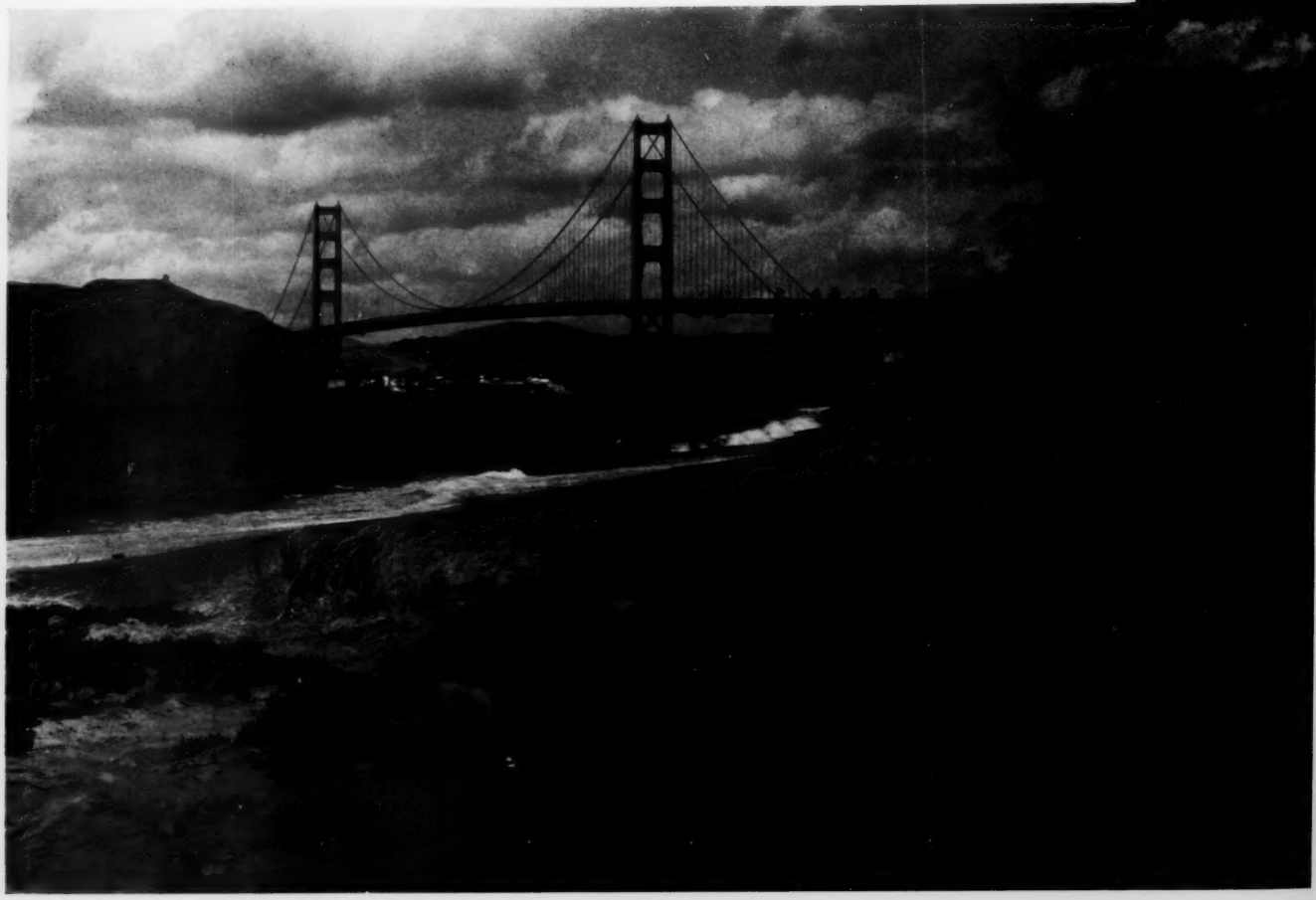
WITH NOTES BY JOHN THOMAS HOWELL

Alta Plaza's granite steps become a terraced garden with plantain, knotweed, and ribwort from the Old World, and Chilean brome from the New. . . . The sturdy Victorian houses flanking Alamo Square are no more indigenous than naturalized flora of lawn and sidewalk crannies—European man brought both to San Francisco.

In cosmopolitan San Francisco, wide-traveling plants from Old World and New find congenial homes along the waterfront, beside busy streets, about parks and playgrounds, on dunes and beaches and windswept hilltops, and in confined dooryards—plant migrants to fit every nook and cranny in a naturally diverse habitat modified by man with ever increasing pressure through nearly two centuries. The majority of our common weeds traveled with man as he moved outward from many points around that ancient crossroads of civilization, the Mediterranean Sea.

Doorstep Botany in San Francisco

THE GOLDEN GATE—San Francisco's doorstep. Here on serpentine slope and sandy flat thrive the same kinds of plants that welcomed our first botanical visitors—Menzies, naturalist on the Vancouver expedition of 1792; Chamisso and Eschscholtz, botanists of the first Kotzebue expedition in 1816. To hold the drifting sands the European beach-grass and the South African hottentot-fig have been added to the scene. Nature's filagree and man's cobweb—rare plants and incomparable bridge spring from serpentine bluff at Fort Point. Many of the plants that grow on San Francisco's extensive outcroppings of serpentine are strictly Californian—they grow nowhere in the world beyond its boundaries. In the foreground of the city panorama, open grassy slopes of Bernal Heights rise clear of a thousand and one crowded San Francisco doorsteps. On the skyline left of center is the broad rounded top of Angel Island on the Marin shore beyond the city and the bay within the Golden Gate.

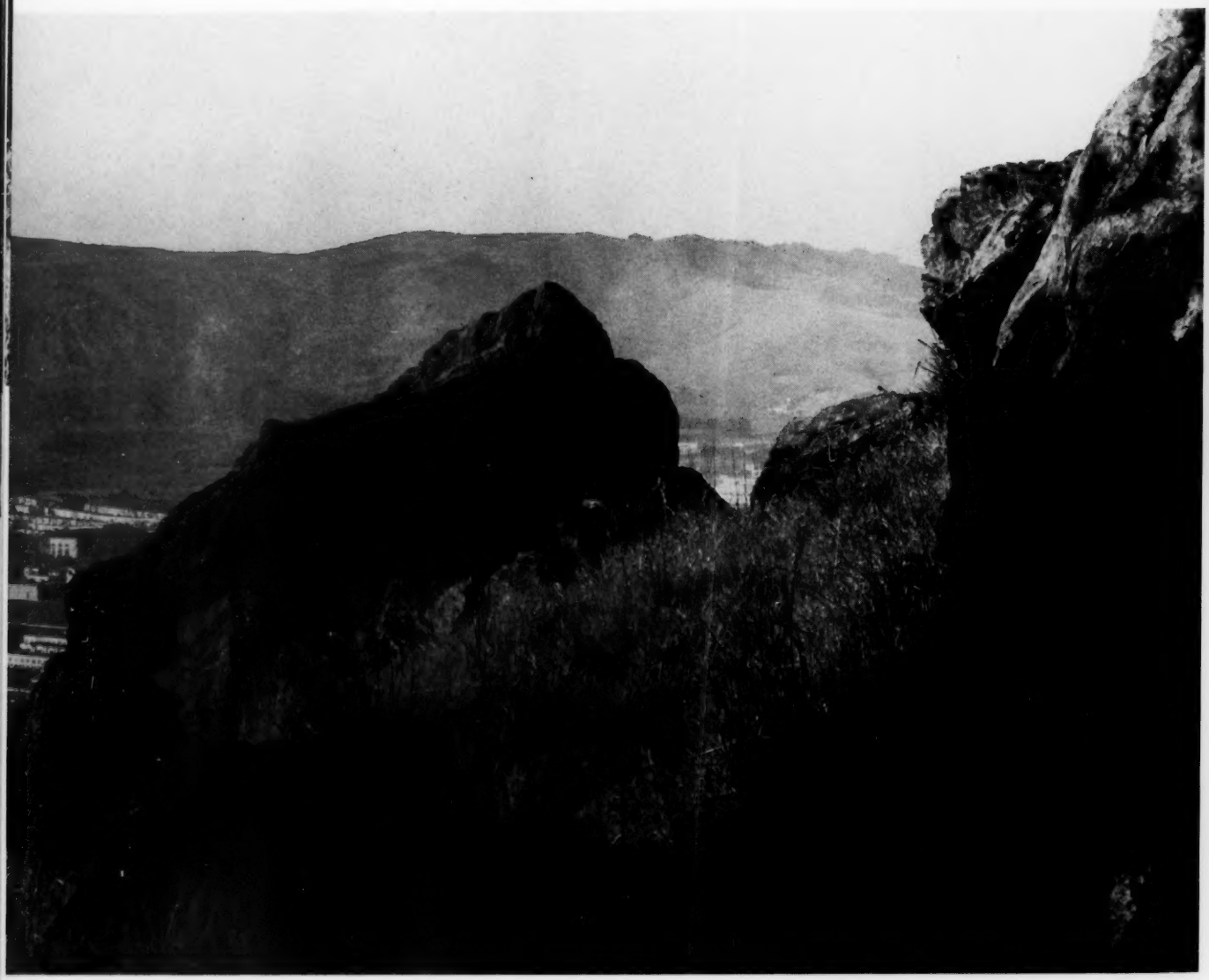


Paraphrasing California's well known fire-prevention plea: let's keep some parts of our state always green and golden by saving for posterity some bits of primal grassland such as the Bernal slope that sets off the city view above. Green and blooming in spring, tawny gold in summer and fall, such areas are home to many of California's choicest grasses and wildflowers.

Dooryards, boulevards, and golfing greens have brought man to the edge of Lake Merced. Remnants of the native flora are still found, however, in the aquatic plants that grow in its shallows and along its marshy strand. Above the water rise steep or gentle sandy slopes on which grow many of the shrubby and herbaceous plants that were characteristic of San Francisco's once extensive sandy drifts and dunes. Here on the brink of the Pacific, more than one hundred and forty years ago, Chamisso and Eschscholtz walked over the dunes and maritime slopes and made first collections of the California poppy (*Eschscholzia*), the blue bush lupine (*Lupinus Chamissonis*), the California wild rose (*Rosa californica*), and many other plants now so familiar to us. On wild slopes of the Presidio and on oceanic headlands at Land's End plants still grow much as Kotzebue's two botanists saw them. The Monterey cypresses in these two pictures have been planted.

The Monterey cypresses were planted around Lake Merced in an early-day effort to "beautify" the lake. Beyond and to the left of the trees that half fill the picture on page 18 are young cypresses grown from seed the older trees scattered. Here is a "naturalized" occurrence of one of California's rarest and most famous trees, known wild only in the restricted groves on granitic headlands shaping Carmel Bay, roughly a hundred miles to the south. . . . Lincoln Park, western terminus of the historic Lincoln Highway and site of the magnificent San Francisco Palace of the Legion of Honor, covers the slopes above the Seacliff shore of the Golden Gate. This view on page 19 is almost the exact opposite of the bridge view on page 16.)

Bayview Hills in San Francisco's southeast corner—a slight stronghold of natural beauty looking toward the mechanized monstrosity of Hunters Point's navy yard—will be windbreak and backdrop for a huge new baseball stadium. . . . California sagebrush is particularly characteristic of rocky coastal hills in southern California, but it grows all the way from the Mendocino and Sonoma coastline in the north to Baja California—to a point beyond Ensenada —in the south.

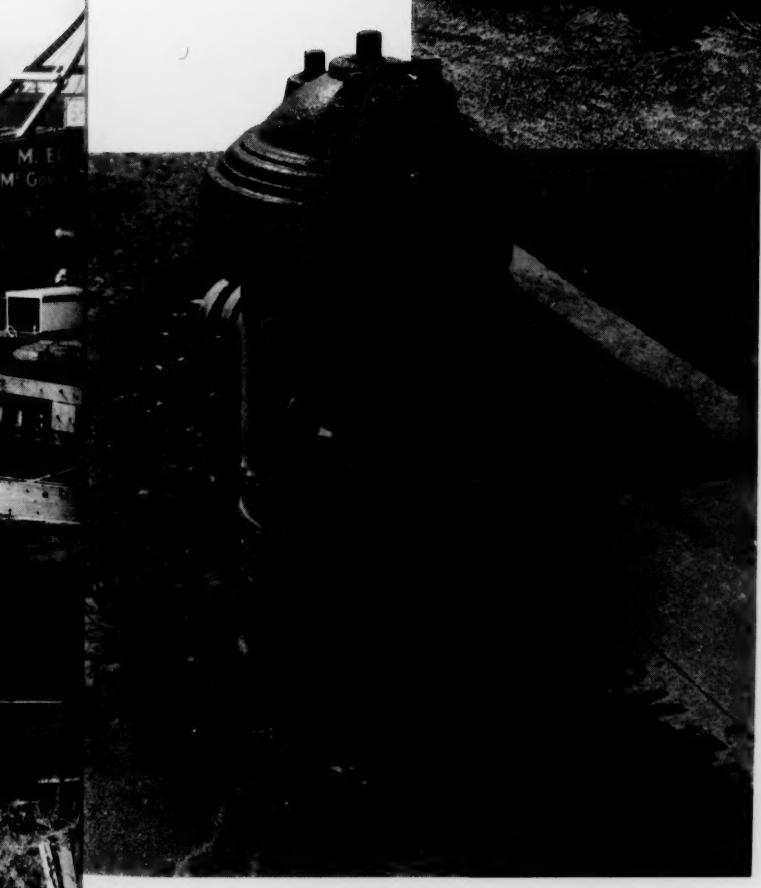


A NATURAL ROCK GARDEN extends along the summit of the Bayview Hills that look to the southwest over Visitacion Valley and to San Bruno Mountain in San Mateo County. Here among tumbled blocks of red Franciscan chert are shrubby thickets of islay, oso berry, choke cherry, poison oak, and California sagebrush. Hen-and-chickens grow in rock crevices, ferns thrive in moist mossy nooks, and wildflower patches brighten more open meadowy places. A hilltop garden to be preserved crowns the Bayview Hills. To what age California sagebrush might live is not known, but this thriving oldster is surely a patriarch of the clan. Anchored in the Bayview chert, the venerable plant was undoubtedly already a lusty youth even before its kind was known to science. The historic collection first tagged with the name *Artemisia californica* was made by Chamisso in 1816 on his famous visit to San Francisco's peninsular terrain.

NATIVE TREES were never a conspicuous feature on the historic San Francisco landscape—such arboreal species as did grow here were often stunted in their windy, sandy, maritime habitat. Archibald Menzies in 1792 wrote of the "stinted scrubby appearance" of the vegetation. Trees flourished in some favored places, nevertheless, and even today the groves of live oak in Golden Gate Park probably look much as they have always looked. Elsewhere in the park and in other parts of the city the fine growth of Monterey cypress, Monterey pine, blue gum, and other introduced trees gives one the impression that their kinds have always been here. Now, in fact, they are reproducing naturally as if they intended to stay, welcome members of San Francisco's highly cosmopolitan plant community. The city has been fortunate in the vision that has provided it with trees.

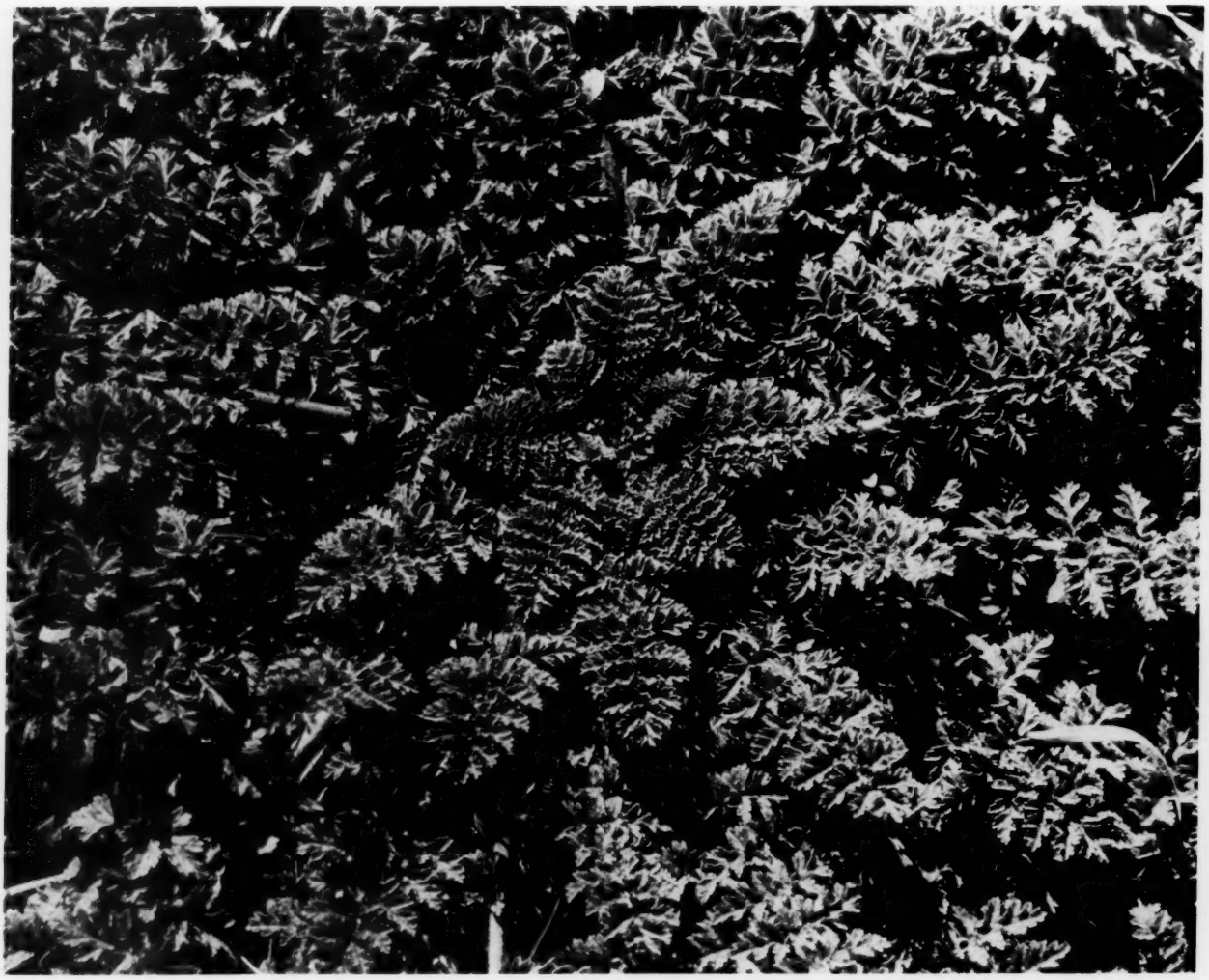
The coast live oak, *Quercus agrifolia*—the *encina* of the Spanish-Californians—was described from specimens collected at Monterey by the Malaspina expedition in 1791. At the same time and place the California valley oak—the *roble*—was also collected, to furnish the material on which the botanical name *Quercus lobata* rests. Only the *encina* is native in San Francisco. . . . Lindley Meadow, one of the numerous grassy expanses in Golden Gate Park, makes a happy adopted home for many "lawn weeds"—plants which cannot tell the difference between a natural wild meadow and a cultivated lawn. The Park's lawns, indeed, are rich sources for meadow plants from far and near.

UNFORTUNATELY certain aspects of the historical botanical scene in San Francisco are doomed. All that now remains of the formerly wide-spreading salt marshes that bordered the bay-side of the city is a pitiful, trash-strewn fragment at the mouth of Islais Creek. Here pickleweed and other marsh plants put up a valiant but losing battle against man. It is but a matter of time when their last defenses will be down in the name of Development. Islais Creek is also a sorry remnant of what was once a pleasant stream that flowed eastward across flowery fields and entered the bay by a tidal channel meandering through pristine salt marshes. The stream took its name from the islay or holly-leaved cherry which was once a common shrub on rocky slopes along its course and is still found on the summit ridge of the Bayview Hills.



Sweet alyssum that might adorn a Roman ruin and fragrant roubieva which could be seen among the stones of an Inca temple have come together to grace the balustraded terrace of the Palace of the Legion of Honor. "Art is long" and so are the trails our migrant plants have traveled. . . . An Embarcadero fireplug at the foot of Montgomery Street has gathered a little botanical garden comprising six genera in four families—the list, for anyone interested: *Lolium multiflorum, Polygonum aviculare, Sisymbrium orientale, Conyza crispa, Cotula australis, Taraxacum officinale.*

But San Francisco will never be without plants, and even keeping abreast of its weedy introduced flora can be a project absorbing the attention of a professional or the interest of an amateur. Whereas in the past the botanist had to go to marsh, dune, hilltop, or brushy glade to find his flowers, now—owing to man's interference and plants' adaptability—a naturalized flora may be no farther away than the sidewalk beyond a city doorstep.



"Clocks" to the schoolboy in the vacant lot, the filaree (*Erodium cicutarium*) is one of California's commonest and most widespread plants. A pedestrian on the Embarcadero might tramp on this lacy rosette without ever seeing the beauty of its radial design.

TO HEAR THE HEAVENS WHISPER

BY LATE SPRING, this year twin "ears" each 90 feet in diameter will be listening to the heavens from their 45-foot pedestals in the Owens Valley desert. These are California's newest radio telescopes operated by the California Institute of Technology. The Office of Naval Research is financing most of the $1,500,000 project.

The remote desert site near the community of Big Pine, in southern California, was selected because it is deep between the high Sierra Nevada and White Mountain ranges. They will shield the extremely sensitive electronic ears from man-made radio and television transmissions.

John G. Bolton, at 36 a pioneer and leader in the new field of radio astronomy, came here from Australia to help design the observatory and to serve as its scientific director. With G. J. Stanley, now also at Caltech, he discovered the first of the so-called radio stars in 1947.

With these new instruments, radio static from space is caught by large dish-shaped reflector antennas, which focus the radio waves to a point as telescope mirrors focus light. The incoming signals are presented on pen recorders, oscilloscopes, or magnetic tapes.

The young science of radio astronomy opens a new window to the universe. It represents an extension of optical astronomy to a range of wavelengths longer than the eye can see. The wavelength range covers both the radio and the television bands, which is why an isolated site is required for observing. Radio telescopes have the advantage over optical instruments of being able to observe through clouds—in the atmosphere or in space—that obscure visual observing. In parts of the radio spectrum, observing can be done in daylight.

There are a number of large radio telescopes in use in this and in other countries—including England's 250-foot dish, which is the largest—and several more are being built in the United States. The Owens Valley instrument, will be one of the most versatile because of its twin antennas. Stellar signal sources can be more accurately pinpointed by a team of two dishes with the use of a technique known as interferometry. For certain purposes the separation between the two antennas must be variable, so their wheeled mountings will ride on railroad tracks 1600 feet long. Both dishes will move at present on the east-west tracks. As soon as the north-south tracks are built, one dish probably will be shifted to it. Both sets of tracks will join at one point.

"Our research program will include attempts to identify several hundred radio sources with visible objects so we can see and study the mechanism responsible for generating the signals," Bolton said. "So far, only about 50 of some 2,000 known radio sources have been identified.

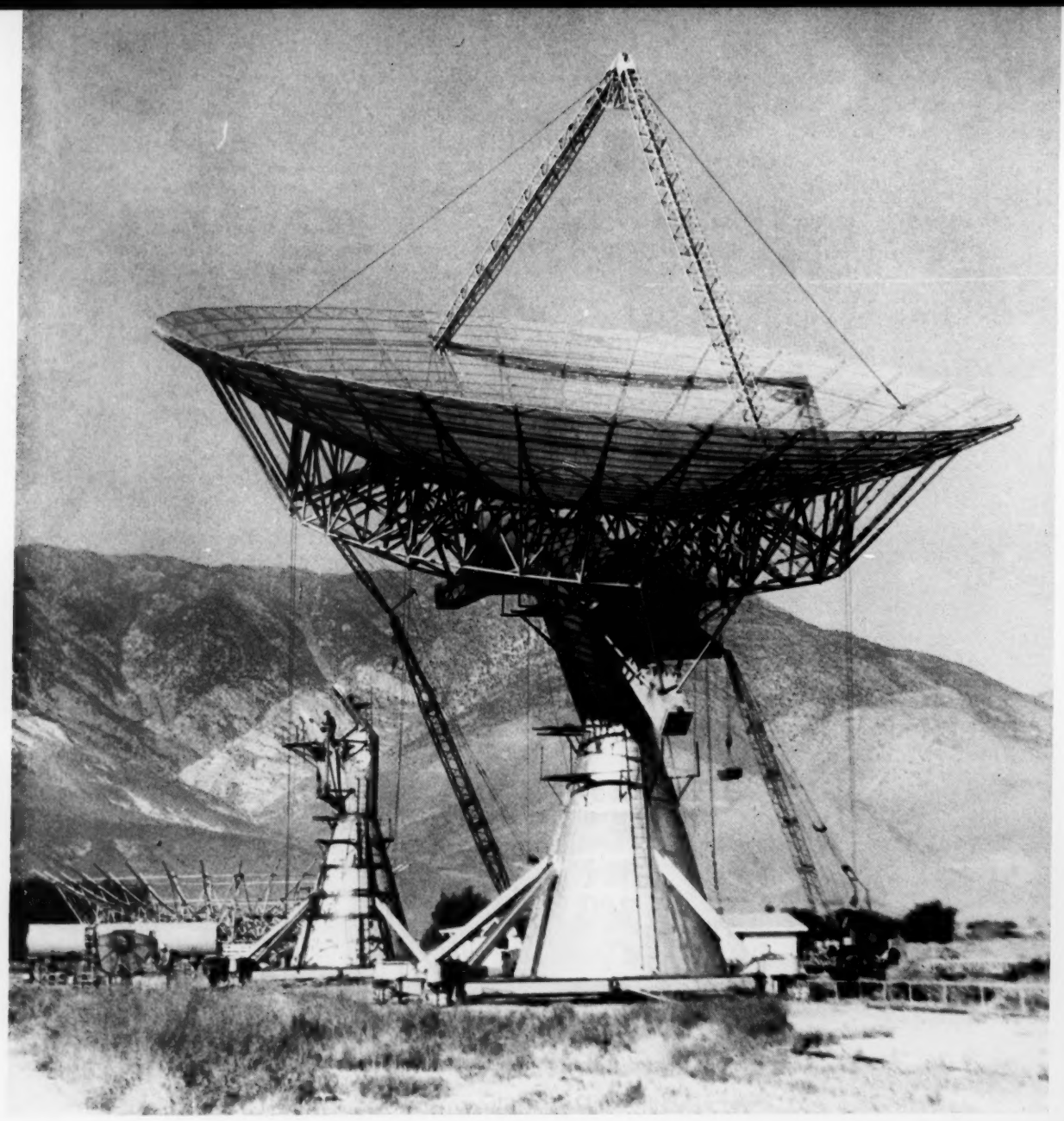
"Some of the radio sources are associated with the grand catastrophies of nature, such as the remnants of an exploded star or the collision of two galaxies near the edge of the visible universe. In fact, some of the objects detected by the Owens Valley telescopes may be beyond the range of the largest optical instruments."

The research program also will include studying solar outbursts believed to be due to streams of ionized matter, or pieces of atoms, blasted into space from the sun, and responsible for the aurora borealis.

The 90-foot antennas will be used for studying signal wavelengths ranging from about two inches to nearly 40 inches in length. To get sharp "pictures" of a radio object, the antenna must be many times larger than the length of the waves it receives. (The pupil of your eye has a diameter several thousand times the wavelengths of ordinary light.) For a radio telescope to "see" radio sources as distinctly as the human eye can see objects the radio telescope would have to be half-a-mile in diameter! (Assuming the radio telescope is tuned to radio wavelengths just a few inches long.)

While the 300-acre Owens Valley site provides excellent mountain barriers against radio interference, it can offer high winds on occasion. The wind posed a problem because each dish carries more than 6,000 square feet of steel mesh as its reflector. These could act as huge sails. The sheeting is perforated to lower wind resistance, to reduce over-all weight and to let rain through. These holes are three-eighths of an inch long. If they were larger, radio waves of certain useful sizes would sift through them and be lost. The heavy mountings had to be anchored against the wind and at the same time had to be mobile for interferometry. Mobility was achieved by setting the mountings on wheels. To reduce topheaviness and increase stability, the two rails were set 35 feet apart in reinforced concrete foundations. The mountings may be locked to reinforced caissons set at intervals along the tracks. A truck or a tractor will be used to tow the heavy instruments along their tracks to each caisson, where they will be locked in place.

The radio telescopes are built to take winds of 80 miles an hour. However, they will not be used for exacting observations if the air flow exceeds 25 m.p.h. because gusts above that velocity would tend to distort the skin frame of the reflector, Bolton explained. So well are the 90-foot dishes counterbalanced that a one-horsepower electric motor is used to aim them. Operating on only a fraction of its power, the same motor is used to track the stars.



Just as city lights reflected in the night sky hinder optical observations, so do electrical disturbances affect radio observations, Bolton said. As a result, the electrical wiring is brought into the Owens Valley Observatory at a low voltage to avoid coronal discharges from the wiring. No television, electric razors, or fluorescent lamps may be used during observations. C.F.H.

NOTE: Many passages in this article are taken verbatim from the news release issued by the California Institute of Technology.

↑ The first antenna is completed, the second under construction at the California Institute of Technology's radio observatory in Owens Valley, California. The dish is 90 feet in diameter. From the ground to the apex of the receiver boom above the top of the dish is another 90 feet.

→ Workmen attaching the skin of the second dish to its pipe and tubing frame. In the background is the other antenna in place. (California Institute of Technology photos)

SKY DIARY

January, February, March, 1959
(Pacific STANDARD Time used throughout)

Phases of the Moon

☾	Last Quarter	January 2	2:50 A.M.
●	New Moon	8	9:34 P.M.
☽	First Quarter	16	1:26 P.M.
○	Full Moon	24	11:32 A.M.
☾	Last Quarter	31	11:06 A.M.
●	New Moon	February 7	11:22 A.M.
☽	First Quarter	15	11:20 A.M.
○	Full Moon	23	12:54 A.M.
☾	Last Quarter	March 1	6:54 P.M.
●	New Moon	9	2:51 A.M.
☽	First Quarter	17	7:10 A.M.
○	Full Moon	24	12:02 P.M.
☾	Last Quarter	31	3:06 A.M.

The Planets

Mercury: Not favorably placed for observation until March, being in superior conjunction on February 13. It reaches greatest eastern elongation on March 12 and will be visible for a few days around this date as an evening star low in the west just after sunset. It reaches inferior conjunction on March 29.

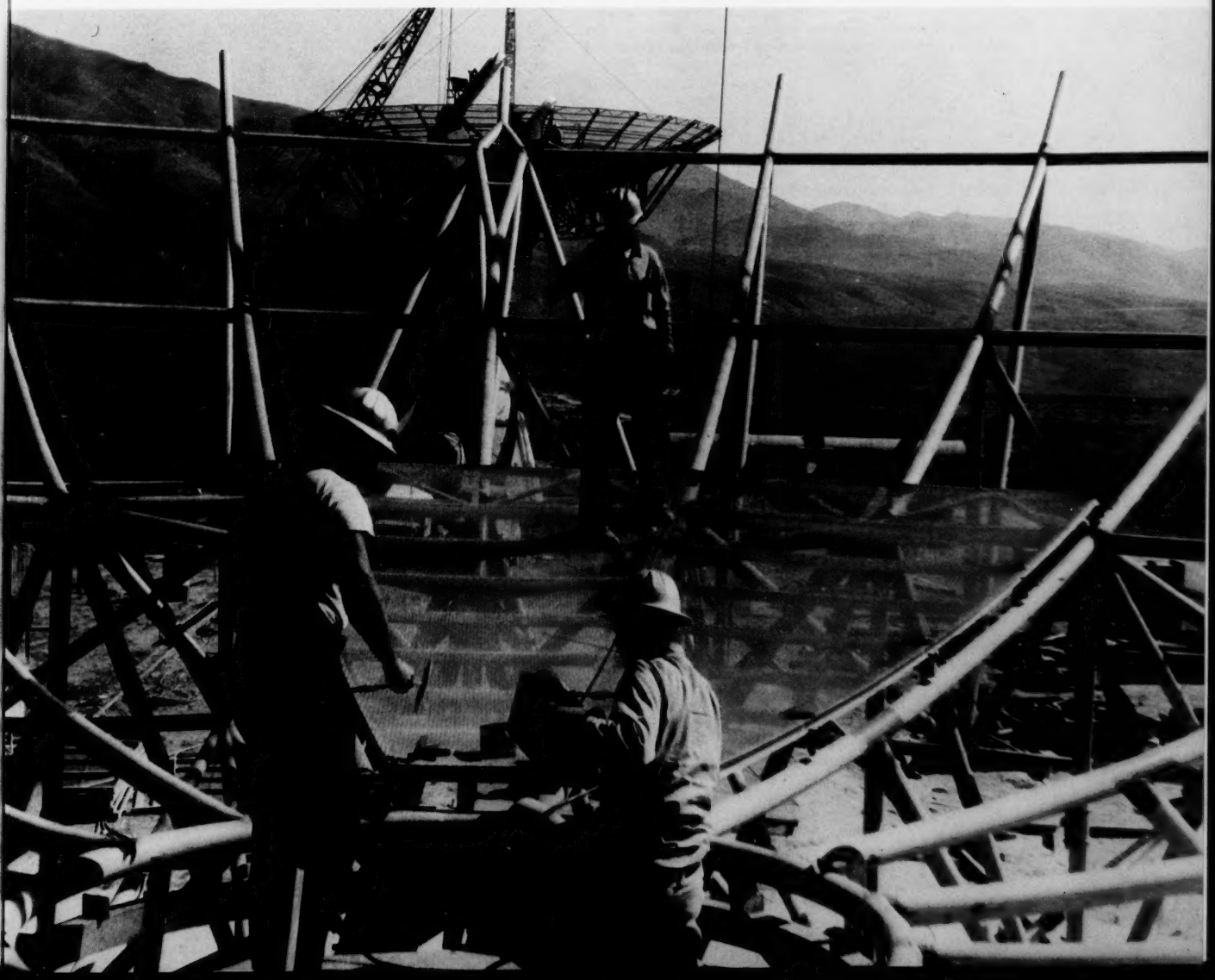
Venus: Has become an evening star (mag. −3.4) and is visible above the southwestern horizon for about an hour after sunset during January and for two hours after sunset during February and March.

Earth: Spring begins on March 21 at 12:55 A.M.

Mars: During January in Aries (mag. −0.2) setting about 2 A.M. On February 26 it reaches Eastern Quadrature (90° east of the sun) and is in Taurus setting about 1 A.M. By the end of March it has faded to magnitude +1.3 and sets at midnight.

Jupiter: In January is in Libra and visible in the morning sky (mag. −1.4). On February 19 it reaches Western Quadrature (90° west of the sun) and rises at 1 A.M. During March it is in Scorpius and of magnitude −1.8. It begins its retrograde motion on March 18.

Saturn: In Sagittarius (mag. +0.7) visible in the morning sky, rising about an hour before the sun on January 15. By mid February it rises about 3 hours before sunrise. On March 27 it reaches Western Quadrature rising at 1:30 A.M.



Past, current, and future

Rivers, Man and Myths: *From Fish Spears to Water Mills.* By Robert Brittain. Doubleday & Company, Inc., Garden City, New York. 1958. 288 pp., 19 halftone plates, 2 line plates, 2 maps. $4.50.

In this era of gigantic hydroelectric and other projects involving man's efforts to completely control and utilize the force of rivers, it is salutary in at least a philosophical sense to review man's ancient relationship to rivers. This has been done with a very nice balance of philosophy and history by Robert Brittain. His history deals with the ancient world of the Mediterranean and the Middle and Far East, where civilization grew on the Tigris and Euphrates, the Nile, the Indus and Ganges, the Mekong, the Yangtze and the Yellow. It is a story of fearing and worshiping and taming the flowing waters; of agriculture, trade, and conquest; of flood and famine, the building and destruction of cities; of fishing villages and empires; of water drawers and kings. His philosophizing grows out of the effects rivers had, and still have, on men's minds and souls—there is religion here, and poetry, and contemplation, and the momentous discovery of the principles and techniques of water conservancy, one of the great building blocks of enduring civilization. He concludes on this note: "The earth cannot be really used for the good of men until all men are able to use their part of it in dignity and freedom. That is the principal thing we have learned in the last thousand years. We have not yet achieved it, but from the use of the river's power we have gone on to discover other sources of energy, until we have become giants who can contend with nature on a more than equal footing. That power has enabled us to free ourselves from drudgery and poverty and contempt. It has prepared us to set about the building of a world in which no human being need be ashamed, or afraid, to live." And he suggests as a "goal of human striving: the creation of some kind of world community, in which all could participate equally," one that "cannot be imposed by force."

Improbable journeys

The Lost World of the Kalahari. By Laurens van der Post. William Morrow and Company, New York. 1958. 279 pp., map. $4.00.

Laurens van der Post's identification with the Bushmen—those mysterious "First People" of desert South West Africa—was a thing of his early childhood. Born on a farm near the Orange River, he grew up in a land haunted with the memory of these ancient little people whom invaders—white and black alike—had hunted down like game. The Bushman lived on as part of all other colored peoples who had taken part in the great extermination or occupied his timeless borderlands. "He was present in the eyes of one of the first women to nurse me," the author says in accounting for the spell that bound him through the years until he was able to realize his dream of searching the heart of the desert for a last free-living remnant of this race which began in the dawn of human time.

The expedition van der Post led into the Kalahari was beset with such frustrations as to suggest a supernatural guardianship over this heartland of a vanishing race, a powerful and inscrutable something to effect improbable, unexplainable thwartings of the final assault on an ethnographic mystery. But the little, apricot-colored Bushmen were found. They were possessed of a physical and spiritual membership in an elemental natural order, a cyclic relationship of rock and rain, drought and sun, plant and animal, in which change is a geological idea, not a discernible process. To a description of their way of life, the author brings all his rare gift of evocative language which at times produces nothing less than sheer poetry. We are left with a feeling which could be one of gladness that humanity has brought with it through time something of its beginnings unbroken—if we did not know too guiltily well that ours is the first human century given to the herding of all mankind harshly forward on the mechanized road toward an ideal of uniform advancement. The kind of progress which drives this present age has scant room for naturalness, or for quiet places where some of mankind may go on living unherded into an alien future.

Time is nearly up for the "lost world" of the Kalahari. Laurens van der Post found that the Bushmen, although still living as the first of them did a geologic age ago, no longer produce the marvelous works of art which have been their legacy to the world, their epitaph on Africa's ancient rocks. But only a very few twentieth century men will be aware of the loss. . . .

Beachcombers of the African Jungle. By Jack Sholomir. Doubleday & Company, Inc., Garden City, New York. 1958. 279 pp., 25 photos. $4.00.

This is a better book than one might guess from the corny and pointless title and the jacket blurb, "Accompanied only by a beautiful girl, Sholomir traveled through the forbidden heart of Africa," which seems intended to lure the sensation-seeker. It is indeed the down-to-earth story of two young people hitch-hiking the entire length of the continent from the Transkei to the Nile Delta, as improbable a journey as one could imagine. Inevitably some of the experiences narrated are rough, even lurid. Sholomir's purpose was frankly adventure, his mental equipment that of a tyro journalist. Nevertheless he has turned in not only a unique and courageous performance in the dogged covering of most difficult ground, but also a quite considerable book about Africa. A South African (his girl Joy Koch is too), he lays bare with the cutting intensity of an insider the sick heart of racial bitterness, economic tension, and political flimflam that hold up the Dark Continent's progress toward the light. He can do that job in the course of vividly telling his personal story because his journalistic gifts, while youthful, are rounded. One expects to hear from him again, as Africa comes to a boil in the next few years.

The best of this book for many readers will be the intimate glimpses of life among the several native tribes the travelers met with, including pygmies, and some groups that had had virtually no other contact with representatives of white civilization.

Through history on a bowstring

The History of Archery. By Edmund Burke. William Morrow and Company, New York. 1957. 224 pp., photos and line drawings. $4.50.

If the journalist, historian, and bowman Edmund Burke of New York is correct in his belief in the probability "that there are more active archers in the world today than at any other period in history," then the history of archery is assuredly a subject of far more than merely academic interest. It has not been settled whether man drew his first bow, in Europe or Asia, during the Late Paleolithic or the Mesolithic age, but it is obvious that archery belongs to all of history and much of prehistory. It is also obvious that the bow belongs in history as a weapon, often a decisive weapon. Mr. Burke's book is therefore in large part a military history of the world, from ancient China and the Near East down to Crécy, Poitiers, and Agincourt, the famous battles which shot England forward as a world power. It is also an ethnographic study, as regards the part

played by the bow in the life of American Indians (who were *not*—popular opinion to the contrary—superior archers). And it concludes on a conservation note, in which the bow is welcomed as an increasingly popular hunting weapon, to the gain of gun-ridden wildlife. All the way through, the historical account is livened by details of custom and craftsmanship and all the rich lore that has grown around this particular one of man's most basic cultural innovations which is comparable, the Encyclopedia Britannica says, to "the discovery of fire and the invention of the wheel."

Readers of *PD's* early issues may recall the story of Ishi, California's last wild Indian (Joel W. Hedgpeth, July-August 1948). Burke tells of Ishi's adoption by the noted archer Dr. Saxton T. Pope, who learned from him much ceremonial lore connected with the bow. D.G.K.

WHO—why and how

Doctors to the World. By Murray Morgan. The Viking Press, New York. 1958. xv + 271 pp., 31 photographs. $5.00.

The organization of WHO as one of the many assisting arms of the UN, and the methodology by which it accomplishes its purpose would probably fill more than one small volume; nevertheless, the author of this one succeeds quite handsomely with a few salient facts. *Doctors to the World* is also an interesting but somewhat brief review of the World Health Organization in non-medical terms. Murray Morgan's engaging account of WHO fighting disease and malnutrition is often overshadowed by incidents related to the overcoming of taboos, sacred rites, illiteracy, and the resistance of various peoples to modern medical help offered to them. Result of 28,000 miles of travel through Latin America and Africa, the present book is by the author of *The Last Wilderness,* Seattle Historical Award of Merit winner, *The Dam, Skid Road,* and several other titles. L.B.G.

Biologia-by-the-Sea

Perspectives in Marine Biology: *A symposium held at Scripps Institution of Oceanography,* March 24-April 2, 1956. Edited by A. A. Buzzati-Traverso. University of California Press, Berkeley and Los Angeles. 1958. xvi + 621 pp., illus. $10.00.

Marine Ecology. By Hilary B. Moore. John Wiley & Sons, New York. 1958. xi + 493 pp., illus. $9.50.

While both of these books concern aspects of marine biology, they are both to some extent misleadingly titled. **Perspectives in Marine Biology** is actually the proceedings of a symposium involving all sorts and conditions of biologists assembled at La Jolla to inspire marine biologists to have new and stimulating ideas. Several sessions were accordingly devoted to "idea groups" assembled at random (more or less) from the participants, and these were summarized by a panel session at the end. The full flavor of these Madison Avenue aspects of the symposium have been lost in the process of editorial dehydration, but the book is full of excellent papers on all sorts of things in and out of the sea: plankton, heredity of marine organisms, biological clocks, fish behavior, coral reefs, oysters, bottom communities, and the intimate working of muscle and of photosynthesis, with much of the comment and authors' rejoinders from the floor included. No astounding new idea was developed as a result of all this; but everyone had a good time and the papers assembled will be a standard source of information and stimulation for years to come.

The second book, Moore's **Marine Ecology,** is not really an ecology in the modern sense, but a summary of literature on marine organisms as studied principally in England, France, and eastern North America. The author for the most part disdains ideas or concepts, so that the book cannot stand alone as a text. It does well, however, as a scientific seashore book, and will provide for those on the Pacific Coast a good idea of conditions in the North Atlantice and along its shores as viewed by one ecologist.

J.W.H.

* * *

From Philosophical Library, publishers, at 15 East 40th Street, New York 16, N.Y., come numerous titles—mostly British imports – in the physical, chemical, mechanical, medical, biological, and other sciences, in the history of science, biography, philosophy, religion, dictionaries and other reference works; generally these are too technical or specialized to warrant PD review, but since many Academy members and other readers have these interests, we are happy to list such titles from time to time as they accumulate [with occasional comments in brackets].

Experimental Psychology and Other Essays, I. P. Pavlov, 1957, 653 pp., $7.50. **The Scientific Study of Social Behaviour,** Michael Argyle, 1957, xiii + 239 pp., $6.00. **Taboo,** Franz Steiner, 1956, 154 pp., $4.75 [the history of various attempts to clarify the concepts behind the word that Captain Cook brought to Europe from Polynesia]. **Ernest Rutherford:** *Atom Pioneer,* John Rowland, 1957, 160 pp., $4.75 [a roadside monument marks the great physicist's birthplace in the tiny hamlet of Brightwater, South Island, New Zealand]. **Science and Modern Life,** Sir E. John Russell, 1955, 101 pp., $2.75 [can some of the problems of human life that the work of Rutherford and others have helped create be solved by "happier relationships between science and religion"?]. **Essays in Science,** Albert Einstein [n.d.], xi + 114 pp., $2.75 [scientific portions of *The World as I See It,* 1934]. **The Leibniz-Clarke Correspondence:** *together with extracts from Newton's* Principia *and* Opticks, *edited with Introduction and Notes by* H. G. Alexander, 1956, lvi + 200 pp., $4.75 [a famous controversy fully documented]. **The Atomic Age and Our Biological Future,** H. V. Brondsted, 1957, xiv + 80 pp., $2.75 [a Danish zoölogist puts simply the reasons behind one of our present and not groundless chief anxieties]. **Atoms and Energy,** H. S. W. Massey, 1956, 174 pp., $4.75 ["a nontechnical account of the developments in atomic physics which led up to the large scale release of atomic energy"]. Three volumes of The Atoms for Peace Series [General Editor, D. Wragge Morley]: **Atomic Energy in Agriculture,** William E. Dick, 1957, x + 150 pp., text figs., charts, 16 halftones; **Atomic Energy in Medicine,** K. E. Halnan, 1957, x + 157 pp., text figs., charts, 14 halftones; **Economics of Atomic Energy,** Mary Goldring, 1957, 179 pp., text figs., 8 halftones; (each) $6.00. **The Microphysical World,** William Wilson, 1954, vii + 216 pp., text figs., $3.75 [atoms, molecules, protons, neutrons, electrons, positrons, for "the intelligent layman"]. **Microbiology,** *an Introduction,* Ernest Gray, 1955, xii + 175 pp., text figs. in line and halftone, $3.75. **The Elements of Chromatography,** Trevor Illtyd Williams [n.d.], 90 pp., text figs. in line and halftone, color plates, $3.75. **Electrical Interference,** A. P. Hale, 1956, vii + 122 pp., text figs. in line, 18 halftone plates, $4.75 [practical help in solving radio and TV problems]. **Cavitation in Hydrodynamics,** National Physical Laboratory [Teddington, England], 1957, illus., $15.00 [bound collation of papers presented at the first International Symposium on Cavitation in Hydrodynamics, 1955]. **The Golden Number,** *and the scientific aesthetics of architecture,* M. Borissavlievitch, 1958, 91 pp., text figs., $4.75. **Classics of Biology,** August Pi Suñer, 1955, x + 337 pp., $7.50 ["fascinating glimpses of the philosophical theories . . . famous controversies"]. **The Ornithologists' Guide,** edited by H. P. W. Hutson, 1956, xix + 275 pp., text figs. in line, $10.00 [of general interest despite British slant and shocking price]. **Insects and Spiders:** *A Book of Keys with Biological Notes,* C. P. Friedlander, D. A. Priest, vii + 124 pp., text figs. in line, $2.75 [British but basic]. **A Dictionary of Dietetics,** Rhoda Ellis, 1956, 152 pp., $6.00 [author is in Department of Home Economics, Brooklyn College, New York]. **Dictionary of Poisons,** Ibert Mellan, Eleanor Mellan, 1956, 150 pp., $4.75 [nearly 12,000 Americans die of poisoning in the home every year; familiarity with this manual could save many lives]. **A Dictionary of Linguistics,** Mario A. Pei, Frank Gaynor, 1954, 238 pp., $6.00. **Dictionary of Arts and Crafts,** John L. Stoutenburgh, Jr., 1956, xii + 259 pp., $6.00 [author is in Department of Public Instruction, American Museum of Natural History].

"The Walls Come Tumbling Down"

EDITOR, *Pacific Discovery:*

It is regretted that Mr. R. R. Delareuelle did not stop in my office during his visit here last March. I would have enjoyed meeting him and discussing the land acquisition program, the present and proposed development, staffing and operations of Big Bend National Park, as planned under the National Park Service MISSION 66 Program.

I should like to have assured him that the National Park Service policy of preserving and protecting the scenic, scientific, wilderness, and historical resources is being followed. I should have assured him, also, that plans for the development of guest accommodations and other facilities in the Castolon area include the retention and use of the suitable existing structures in that area. The park program of development and operation does not include the destruction of buildings or any other facilities which may be considered as of historical significance.

Several years ago, the old structures at Glenn Springs were destroyed, but these were razed because of their hazardous condition and to eliminate any possible chance of injury to visitors. It is my understanding that the buildings razed were of the more modern construction and were not the original buildings in existence during the early days of occupation by the Army and others in the park.

We appreciate Mr. Delareuelle's interest in the preservation of National Park resources which prompted his letter to you. GEORGE W. MILLER, *Superintendent*
Big Bend National Park, Texas, 24 Oct. 1958.

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by G. Harry Stine **$4.00**
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by Lee W. Lenz **$4.00**
A book which selects from the native flora those species which can be recommended for their interest and value to gardeners. The species are described in simple language and their cultural requirements as well as suggested uses for them in California landscaping and gardening are given. Many photographs.

THE CALIFORNIAN WILDLIFE REGION
by Vinson Brown **$2.75**
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ROCKS AND MINERALS OF CALIFORNIA
by Vinson Brown and David Allan **$3.00**
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THE PACIFIC COASTAL WILDLIFE REGION
by Charles Yocom and Ray Dasmann **$2.75**
A guide to the common wild animals and plants of the Pacific Coast states with more than 300 illustrations included.

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(Continued from page 1)

mid-Pacific islands are heterogeneous; their sources are several. Heyerdahl admits that language rules Malaysia in, at some point of time, by some route. Should not others admit that blood-grouping compels the consideration of North America, or that oceanic winds and currents, megalithic monuments, and so forth, require the continued investigation of South America's Pacific coast? Surely the time has come for the unimpassioned pooling of all honest insights.

The next considerable advance toward solution of the Polynesian puzzle, we venture—if Mr. Heyerdahl's *aku-aku* stands him in good stead—will be indicated by publication to the world of science of the results of the recent Norwegian expedition to Easter Island. D.G.K.

Aku-Aku: *The Secret of Easter Island.* By Thor Heyerdahl. Rand McNally & Company, Chicago. 1958. 384 pp., profusely illustrated with photographs, many in full color, endpaper map. $6.95.

Easter Island: *A Stone-Age Civilization of the Pacific.* By Alfred Métraux. Translated from the French by Michael Bullock. Oxford University Press, New York. 1957. 249 pp., 27 photographs, 6 text figs. $5.00.

American Indians in the Pacific: *The Theory behind the Kon-Tiki Expedition.* By Thor Heyerdahl. Rand McNally & Company, Chicago. 1953. xv + 821 pp., 90 halftone plates, many in full color, numerous text figs., 11 maps. $15.00.

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academically speaking

SEEKING REFRESHMENT ashore after six months intensive work on stations in the Western Pacific, scientists and crew of the big Soviet oceanographic laboratory ship *Vityaz* held open house for San Francisco at dockside last December. The director and other Academy staff members exchanged visits with Russian workers in their fields, known before only through correspondence. Here (*center*) in front of her after-deckhouse laboratory is Dr. Zinaida Alexievna Filatova, charming hostess to a *PD* delegation which included Marion (Mrs. D. G.) Kelley (*left*) and Nancy (Mrs. L. B.) Gapinski (*right*). The editor was behind the camera. Larry B. Gapinski shot the *Vityaz*' stern, which (we take pride in our knack for guessing every second or third Russian character) gives her Pacific home port as Vladivostok. She sailed a few days later, homeward bound. Dos vdanya, *Vityaz*, and come again!

Sea Shells of Tropical West America

MARINE MOLLUSKS FROM LOWER CALIFORNIA TO COLOMBIA

A. Myra Keen

This is the first attempt to list and provide illustrations of the sea shells of the entire area of the Panamic marine province. Of the 1,650 species described, 1,500 species are illustrated with about 3,000 views. The notes on geographic distribution indicate where the collector might expect to find them, and an extensive bibliography is included to help the scientist and serious amateur make use of the scattered literature. The glossary explains technical terms commonly used by collectors, but an effort has been made to use nontechnical language wherever possible. 10 pages of four-color plates. 632 pages. $12.50

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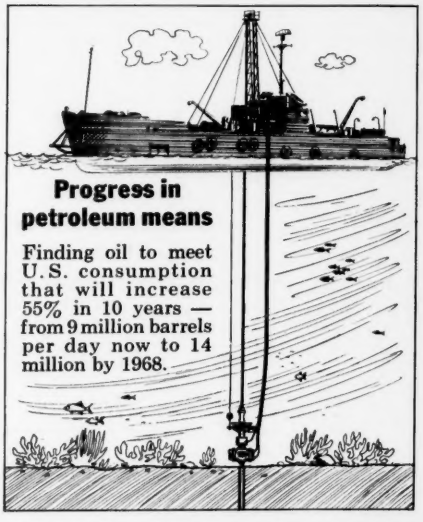

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